# REPORT

OF THE

# MINISTER OF AGRICULTURE

FOR THE

# DOMINION OF CANADA

FOR THE

# YEAR ENDED MARCH 31, 1924

PRINTED BY ORDER OF PARLIAMENT



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1924

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# REPORT

OF THE

# MINISTER OF AGRICULTURE

1923-24

To General His Excellency the Right Honourable Lord Byng of Vimy, G.C.B., G.C.M.G., M.V.O., Governor General and Commander in Chief of the Dominion of Canada.

### MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit to Your Excellency a report of the Department of Agriculture for the fiscal year ended March 31, 1924.

The work of the department was carried out in a most satisfactory and efficient manner, and there will be found included herein a summary of the operations of the different Branches of the Department, all of which is laid before Your Excellency under their respective headings.

The legislation affecting the department during the period consisted of:-

Chapter 3, 13-14, George V, intituled "An Act to amend the Animals Contagious Diseases Act." (Assented to April 13, 1923.)

Chapter 15, 13-14, George V, intituled "An Act to regulate the sale and inspection of Fruit and Fruit Containers." (Assented to April 13, 1923.)

Chapter 18, 13-14, George V, intituled "An Act to amend and consolidate the Acts respecting Live Stock." (Assented to April 13, 1923.)

Chapter 27, 13-14, George V, intituled "An Act respecting the Testing, Inspection and sale of Seeds." (Assented to April 13, 1923.)

Chapter 43, 13-14, George V, intituled "An Act to amend the Dairy Industry Act." (Assented to June 13, 1923.)

Chapter 47, 13-14, George V, intituled "An Act to amend The Feeding Stuffs Act." (Assented to June 13, 1923.)

By proclamation of date 12th day of September, 1923, the "Act respecting the Testing, Inspecting and Sale of Seeds," (assented to on the 13th day of April, 1923), came into operation on the 1st day of October, 1923. (Vide Canada Gazette, Vol. LVII, page 1222).

By Order in Council approved under date May 11, 1923, under and in virtue of the provisions of section 11 of the Root Vegetables Act, 1922 (P.C. 840), the regulations relative to containers in which potatoes shall be packed, established by Order in Council of August 2, 1922, were amended by adding thereto a section providing penalties for infractions. (Vide Canada Gazette, Vol. LVI, 1923, page 4784.

By Order in Council approved under date June 26, 1923, (P.C. 1148, Regulations dealing with fruit packages were established under and in virtue of the provisions of subsection 5 of section 10 of the Act of 13-14, George V. intituled "An Act to regulate the Sale and Inspection of Fruit and Fruit Containers." (Vide Canada Gazette, Vol. LVI, Supplement, June 30, 1923.)

By Order in Council approved under date June 26, 1923, (P.C. 1149), Regulations dealing with the inspection and branding or marking of imported fruit were established, under and in virtue of the provisions of section 5 of the Act of 13-14, George V, intituled "An Act to regulate the Sale and Inspection of Fruit and Fruit Containers." (Vide Canada Gazette, Vol. LVI, Supplement, June 30, 1923.)

By Order in Council approved under date June 26, 1923, (P.C. 1150), the Regulations under the Destructive Insect and Pest Act established by Order in Council of May 17, 1917, were rescinded and new regulations substituted in lieu thereof. (Vide Canada Gazette, Vol. LVI, Supplement, June 30, 1923.)

By Order in Council approved under date June 26, 1923, (P.C. 1151), the Regulations respecting the grading and marking of eggs as established by Order in Council (P.C. 2001) of date September 25, 1922, and amendments thereto, were rescinded and new regulations established and substituted in lieu thereof. (Vide Canada Gazette, Vol. LVI, Supplement, June 30, 1923.)

By Order in Council approved under date October 12, 1923, (P.C. 2076) under and in virtue of the provisions of chapter 43 of the Statutes of 1923, 13-14, George V, intituled "An Act to amend the Dairy Industry Act, 1914," the regulations established under the provisions of the Dairy Industry Act, 1914, as amended, were further amended. (Vide Canada Gazette, Vol. LVII, page 1343.)

By Order in Council approved under date March 4, 1924, (P.C. 352), under and in virtue of the provisions of section 9 of the Live Stock and Live Stock Products Act, 1923, section 3 of the Regulations respecting the grading of hogs as approved by Order in Council, (P.C. 2035), of date October 6, 1922, was amended. (Vide Canada Gazette, Vol. LVII, page 3321.)

By Order in Council approved under date March 12, 1924, (P.C. 398), Regulations established by Order in Council, (P.C. 317), under and in virtue of the provisions of the Dairy Produce Act, chapter 28 of the Statutes of 1921, were amended. (Vide Canada Gazette, Vol. LVII, page 3511.)

## DOMINION EXPERIMENTAL FARMS AND STATIONS

The total value of all field crops in 1923 is estimated by the Dominion Bureau of Statistics as having value of \$899,166,200, as compared with \$962,293,200 in 1922. This is a decrease of \$63,127,000, caused mainly by lower prices in almost every crop. Following will be found a table showing the estimated area, yields, and valuation of the various field crops throughout Canada, and also a table showing the number of farm live stock in the Dominion:—

### AREAS AND ESTIMATES OF YIELD AND VALUE OF FIELD CROPS, 1923

Crop	Area	Yield per acre	Total	Weight per measured bushel	Average price per bushel	Total
	acres	bush.	bush.	lbs.	\$	\$
Fall wheat. Spring wheat. All wheat. Oats. Barley. Rye. Peas. Beans. Buckwheat. Mixed grains. Flax. Corn for husking.  Potatoes. Turnips, mangel, etc.  Hay and clover. Fodder corn.	169,330 63,151 440,121 843,757 629,938 317,729 560,942 194,512	21.00	23,231,800 2,898,200	44·19 54·63 55·29	4 00	17,850,900 299,083,800 316,934,700 184,857,400 32,570,700 11,339,900 4,987,400 2,773,000 8,191,700 17,654,800 12,643,900 12,466,000 56,397,800 22,483,100 162,882,000 24,605,000
Sugar beets	10.000 (20.000) (20.000	9·60 2·65	216,200 1,028,600	********	0 40	1,401,000 11,914,000

### NUMBER OF FARM LIVE STOCK IN THE DOMINION, 1919-23

Live Stock	1919	1920	1921	1922	1923
Horses	3,667,369	3,400,352	3,813,921	3,648,871	3,530,641
	3,548,437	3,504,692	3,736,832	3,745,804	3,659,365
	6,536,573	6,067,504	6,469,373	6,074,065	5,586,866
	3,421,958	3,720,783	3,675,860	3,262,626	2,753,860
	4,040,070	3,516,678	3,904,895	3,915,684	2,753,860

Following will be found some very brief notes indicating the results achieved and progress made on the various Experimental Farms and Stations. These may be characterized in general as very satisfactory indeed.

In addition to the regular three issues of Seasonable Hints and the sending out of several hundred press articles, the following bulletins, pamphlets and circulars were issued during the year:—

### BULLETINS, NEW SERIES

No. 28. Rabbits.

No. 33. Bees and How to Keep Them.

No. 36. Medicinal Plants and Their Cultivation in Canada.

### PAMPHLETS, NEW SERIES

No. 35. Silage and Silo Construction for the Maritime Provinces.

No. 39. How should Canada Export Beef Cattle.

### EXHIBITION CIRCULARS

No. 107. Growing of Feeds for the Winter Feeding of Beef Cattle.

No. 108. Flowers for the Prairie Home.

Complete Index to Seasonable Hints.

## DIVISION OF ANIMAL HUSBANDRY

With horses the breeding work with Clydesdales was continued, and also the collection of data as to work performed and cost of work by horses. Some interesting work was done with beef cattle in the sending of two trial shipments overseas. Of the results of these shipments the first appears in pamphlet No. 39 and the second is reported on in the Report of the Division of Animal

Husbandry.

The dairy cattle have continued to show improvement. Tuberculosis, while not entirely eradicated, has been kept still more closely in check. Some importations of pure-bred cattle were made, and an exhibit of Ayrshires, made at the Royal Winter Fair, was exceptionally successful. Importations of pure-bred swine were also made and a wide range of experimental work was continued, much of it looking to the production and correct feeding of the bacon type of hog. Work in the dairy was continued along usual lines, and much assistance was obtained both in the cattle barns and dairy through the co-operation of the newly-formed Division of Bacteriology.

Agricultural survey work was continued in the province of Quebec, and the results, combined with those of the previous year, are being brought out in

Bulletin form.

### DIVISION OF FIELD HUSBANDRY

As a rule, large crop yields were secured on the Central Farm in 1923, such as oats, 67.4 bushel per acre; wheat, 38.6 bushels per acre; barley, 56.4 bushels per acre; hay, 3.8 tons per acre; corn, 15.4 tons per acre; mangels, 21.4 tons per acre. Accurate records were, as usual, kept on cost of production of field crops on all the Farms throughout the System. Experimental work was conducted on various rotations, cultural methods, use of farm manure vs. commercial fertilizer, etc., etc.

### DIVISION OF HORTICULTURE

As in previous years the work of this division was continued mainly along practical lines. For many years it has paid special attention to the originating of new varieties of fruits better suited to the different conditions of Canada, and, in all, six silver Wilder awards have been won from the American Pomological Society, the oldest association of the kind in America. The one in 1923 was

for the Lobo apple, originated in the Horticultural Division.

An investigation was conducted into the cause of the breakdown of the Jonathan apple, strong evidence being secured that the greatest cause of this trouble lies in stage of maturity at which the apples are picked. Work was also conducted on the identification of varieties of apples by their leaves and with the work in fruit breeding. In vegetable gardening there were continued the usual tests of varieties, and also a considerable amount of breeding work to secure earlier varieties. A bulletin on "Modern Orchard Practices" was brought out during the year.

### CEREAL DIVISION

The chief function of this division is to discover or produce superior varieties of cereal grains, peas, beans, flax, hemp and buckwheat. Practically all the cross breeding work in connection with this is conducted at the Central Farm, the product being sent to the branch Farm for wider testing and multiplication, in cases where the product proves of value. Breeding work with wheat to secure a variety resistant to rust is an important feature. The work in milling and baking, discontinued for several years, was resumed this year.

The usual testing of varieties was continued on some 3,277 plots. The distribution of small samples of seed was, however, discontinued, its place being taken by special opportunity afforded to secure larger quantities of pure seed.

### FORAGE CROPS

Work in this division was continued and a special opportunity for corn breeding work has been provided for 1924 by the extension of the area on what

was formerly the tobacco station at Harrow, in southwestern Ontario.

A large number of grasses and clovers, biennials and perennials and hay crops were under trial. The improved variety "Boon" timothy, originated at the Central Farm, is being multiplied. Over ten thousand isolations of individual sunflower plants were made, and a large number of tests of field roots were conducted in order to establish a standard variety.

### POULTRY DIVISION

The work of this division is becoming more and more widespread and important. The breeding work is yielding excellent results, both on the Central and on many of the branch Farms, as is the work with feeds and feeding both of chicks and of hens and pullets for winter egg production. The study of poultry diseases is facilitated by the co-operation of an officer of the Health of Animals Branch, who devotes his full time to this work.

An interesting feature of the work of the division is the egg laying contests, one of which is conducted in each province of the Dominion, as well as the national one at the Central Farm, Ottawa, Records made in these contests

are now made the basis of registration.

A considerable amount of field work, or poultry survey work, is being done especially in the province of Quebec with excellent results.

### DIVISION OF CHEMISTRY

The year's work consisted largely in the continuation of lines of investigation involving analysis and furnishing information on soils, manures, fertilizers, forage crops, feeding stuffs, waters, insecticides and fungicides, etc., etc., together with a considerable amount of analysis of food samples for the Meat and Canned Foods Division and work for other departments of the Government.

### DIVISION OF BOTANY

In economic botany the division has maintained and extended its services to farmers relative to weed extermination. A number of addresses on this topic have been given and a large amount of printed material sent out. A weed survey has also been made by means of a questionnaire sent out to a large number of farmers. A number of poisonous plants, samples of which were sent in, have also been examined and reports made.

In plant pathology continued progress has been carried on. The department was represented at the International Conference in plant pathology at Wageningen, Holland, during the year, and a statement presented re international plant disease investigation. The study of white pine blister rust and rust of wheat and cereal smut was continued, as well as the seed potato certification and mosaic free raspberries distribution.

### ECONOMIC FIBRE PRODUCTION

Owing to late spring and unfavourable growing weather, the yields of flax were considerably lower in 1923 than in the previous year. The experimental work comprised variety tests, harvesting at different stages of maturity, seeding experiments, application of commercial fertilizers, retting experiments, tests of the Boby scutching machine, cost of growing an acre of flax and converting the same into fibre, etc., etc. The possibilities of producing fibre flax at a number of the branch Farms are well brought out and a certain amount of extension work was carried on at Caraquet, N.B.

### BACTERIOLOGY

This division was created during the year for the purpose of dealing with those problems of agriculture essentially bacteriological. It will, of course, in carrying out this policy, maintain the closest co-operation with other divisions. A laboratory is being formed for its use. It will take charge of the sending out of nitro culture for legiuminous crops formerly handled by the Botanical Division. Its main lines of investigation will be pure milk production, bacteriological life in soils, retting of flax, etc., etc.

### TOBACCO DIVISION

The season of 1923 was very unfavourable, both in Ontario and Quebec, as far as yields were concerned. The quality, however, of the bright flue-cured tobacco was exceptionally good. During the last few years, special attention has been devoted to varieties of aromatic tobacco likely to become acclimatized in the province of Quebec, and certain varieties of these are giving great promise in this regard. The usual experiments were carried on in the applications of fertilizers of different formulae, the preparation and treatment of the tobacco seed bed and seedlings, transplanting, cultivation, topping, harvesting, curing, fermenting, etc., and also the treatment of diseased land.

### BEE DIVISION

The winter of 1922-23 was noted for the large number of colonies which perished from lack of or unwholesome stores or insufficient protection. During the season of 1923, however, excellent yields in honey production were obtained at a large number of Experimental Stations throughout the Dominion. The experiments carried on were mainly the effort to ascertain the value of bees as agents in the cross pollenation, a comparative test of various means and rates of foundation experiments in swarm control, tests of various sizes of hives, and means of protecting colonies.

### DIVISION OF ILLUSTRATION STATIONS

The work of this division has widened, thirty-six new sites have been selected, making a total number of Stations now 125, located as follows; six stations in Prince Edward Island, fifteen in Nova Scotia, seventeen in New Brunswick, thirty-five in Quebec, seven in Ontario, twenty in Saskatchewan, twelve in Alberta, and thirteen in British Columbia.

The work of the Divisions of Illustration Stations briefly is to carry to the farmer in his own district and especially in those cases where he is so far remote that he cannot visit the Experimental Farm itself the proved results of experiments, thereby demonstrating to him their practical money making

value as applied to his farm practise. Most excellent result's have been obtained from this work, such as crop rotations, time and manner of cultivation and seeding, smut control, clover seed growing, introducing new crops, growing certified seed potatoes and registered seed grain, summerfallow treatment, growing corn and sunflowers as summerfallow substitutes, etc., etc. In connection with all this work careful cost of production records are kept. Field meetings are held wherever possible, and every effort is made to stimulate the interest of the farmer.

### EXTENSION AND PUBLICITY

The work of this division may be briefly defined as an endeavour to carry to the farmer some of the results obtained on the Experimental Farms by means of educational exhibits, collecting and editing material for the press, assembling and preparing for publication material for "Seasonable Hints", preparing material for lectures and sets of lantern slides, etc., etc. During the year exhibits were made at fifty-nine different points, and speaking briefly it may be said that the activities and usefulness of the Division are limited only by its ability to fill the numbers of requests received from the public for its information and material.

### GENERAL

Besides the activities which may be attributed to some special division of the work at the Central Farm, there is a large amount of work being done and a great deal of information sent out; among these may be included the work of the Draughting Room, where in addition to the drawing up of the plans and specifications for most of the buildings to be erected upon the Experimental Farms themselves, much assistance is given the farmer in the construction or repair of his farm buildings. Sets of stock plans are kept on hand of almost every style and size of building which might be required, lumber specifications for the same, etc., etc., are available free for the asking, and through correspondence all possible information is furnished him in his construction and repair.

# EXPERIMENTAL STATION, CHARLOTTETOWN, P.E.I.

Seeding was not general until May 18, fully a week later than usual. The summer was cool and crops matured slowly; pastures were good throughout the entire season. During the year, the Henrietta Connolly property of three acres was added to the Station. The work of draining the Blake property was con-

tinued and the Station buildings were kept in good repair.

With dairy cattle, the Ayrshire breed was greatly improved by the addition from the Central Farm at Ottawa of Lord Kyle 8th No. 81916, the Junior Champion at the 1923 Royal at Toronto, Ont., and by the excellent young heifers bred at the Station. The herd including young calves numbered eighteen at the close of the year. Experiments in feeding steers were continued as was work with swine breeding, the demand for young pigs from boys' clubs being so great as entirely to take up all the spring litters.

With poultry, work was continued in developing uniform bred-to-lay strains of Barred Plymouth Rocks and Single Comb White Leghorns. The 5th Egg Laying Contest closed in October, the average number of eggs per hen being 160.

The usual work was carried on in production of field crops, cultural experi-

ments and variety tests of cereals, forage crops, fruits, vegetables, etc.

A considerable amount of work was done in attending and addressing

agricultural meetings and showing at fairs.

Six Illustration Stations located on the island were under the immediate supervision of the superintendent during the year.

# EXPERIMENTAL STATION, KENTVILLE, N.S.

Spring was late and summer temperatures were low, thus maturity of crops was delayed.

With fruit, the blossoming period was late, but the fall was favourable and the fruit was well coloured. A considerable percentage of it was blown off by two severe wind storms during the growing season.

Extensive work was continued in the control of apple diseases and insects, also in the production of special early vegetable crops, growing of disease-free

potatoes, etc.

Work with forage crops embraced tests of clovers and grasses of different strains and the mixtures of the same likely to prove desirable for hay. Varieties

of roots and sunflowers were also tested.

With field husbandry, the work included tests to gather information as to the fodder crops likely to give most economical returns for the labour required to produce them. It was shown that while Indian corn can be grown more cheaply than roots, the lack of special storage facilities for the former makes reals a cheaper crop to grow. Extensive work was conducted with fertilizers; the value of ground limestone in the production of hay and cereal crops was well brought out.

An experimental shipment of steers was made to England and the prures above cost of transportation, showed one cent per pound live weight name than local buyers were offering at the time.

With poultry, considerable progress has been made in the production of heavy laying strains and the work with bees has been increased to include seventy colonies with two out-apiaries of four colonies each.

Fifteen Illustration Stations are under the direct supervision of the super-

intendent.

# EXPERIMENTAL FARM, NAPPAN, N.S.

Spring opened late, seeding being delayed until the last of May, but a favourable fall permitted of harvesting all crops in excellent condition.

With live stock, Guernseys, Shorthorns, and Holsteins are kept on the Station, both grades and pure-breds. With the first named breed, the first princ in the senior call class and reserve juntor championship were won at the Royal Show. With swine, the Yorkshires and Berkshires are being kept and figures on cost of maintenance of pork production, housing conditions, and by sling for bacon type are being collected. With sheep, the Shropshires only are maintained. No breeding work has yet been done with horses.

Variety tests were carried on with cereals, forage crops, tree fruits, small

fruits, and vegetables.

In poultry, the 4th Egg Laying Contest was completed at the end of November. The average production per hen in the contest was 143 3 eggs. In the Station flock, the highest egg record so far obtained is 308 eggs for the year.

Exhibits from the Station were shown at a number of points in the province during the season and addresses were delivered by the superintendent and his

assistants.

# EXPERIMENTAL STATION, FREDERICTON, N.B.

The Holstein, Ayrshire, and dual purpose Shorthorn breeds are kept here, the hard having been fully accredited as free from tuberculosis, on I bouary 16, 1923. Experimental work in feeding, breeding, and housing is conducted with all these. The breed of sheep kept is the Shropshire, with which various breeding and feeding experiments are conducted. No experimental work is being carried on with horses, they being kept for farm labour only.

With poultry, egg production was higher than during any previous year, one hen in the Farm flock laying 306 eggs. Hatching results, however, were unsatisfactory. In the Egg Laying Contest, the average was higher than in the previous year, being 163.25 eggs per hen.

Variety tests were continued with cereals and some especially interesting

work was done in the use of fertilizers.

In field husbandry, a comprehensive system of crop rotations was com-

menced.

The superintendent had supervision over the Illustration Stations conducted in the province, the work from which is already showing excellent results.

# Experimental Station, Ste. Anne de la Pocatière, Que.

The severe winter of 1922-23 delayed the opening of spring, the first grain being sown on May 5. The cold spring was followed by a severe drought ending only in the middle of August, which resulted in very poor crop yields, with the exception of late crops which benefited by moisture and warm weather in late summer and early fall.

A stud of Percheron horses is being built up at this Station. With dairy cattle, the Ayrshire is the best breed kept, and it was much improved this year by the introduction of a few cows of excellent quality. Experimental work is being carried on in the rearing of calves and the feeding of dairy cattle to determine the comparative values of corn and sunflower silage, oat hay and roots.

In horticulture, variety tests were conducted with tree fruits, small fruits, vegetables, potatoes, shrubs, and flowers, and also tests with varieties of cereals and forage crops. In the latter two cases, however, the severe drought practically destroyed the plots and made the results of little or no value.

During the year, a Plant Pathological Laboratory was erected on the

Station.

An Egg Laying Contest was commenced during the year with poultry, being made up of twelve pens. Results cannot be given until next fall.

The year was a very poor one for bees owing to the late spring and lack of

blossom.

Eighteen Illustration Stations are under the direction of the superintendent and were regularly visited. Although many of these suffered from seasonal conditions, yet the work at all was carefully conducted.

During the year, the superintendent and his assistants gave over forty addresses on farm topics and a number of exhibits were shown at various fairs.

# EXPERIMENTAL STATION, LENNOXVILLE, QUE.

The summer was cool but with abundant rainfall which gave good yields

of field crops with the exception of corn which was late.

No experimental work with horses was conducted, but the imported Shire stallion "Snelston Topper" (38528) was kept at the Station during the year. With cattle, Ayrshires, Jerseys, and Shorthorns are kept, and experimental feeding of steers was also conducted during the winter. With sheep, the purebred Oxford Down and high grade Oxfords are kept, the purebred ram lambs to be sold for breeding stock and the others as market lambs. With swine, the main object is breeding and feeding for production of the bacon type of hog.

The work in field husbandry included experiments in drainage, renovation of pasture land, experiments with lime and fertilizers, tests of rotations and cultural methods, etc. In all this work cost of production is kept. Experimental work with forage crops was considerably extended during the year

With horticulture, a wide field of experiment is covered. With three fruits. difficult conditions are encountered owing to severe winter conditions.

With poultry, the Farm flock is an excellent one. In the Egg Laying Contest, twenty-three birds proved eligible for registration and the highest individual

record was 253 eggs.

A considerable amount of fencing was done during the year. An exhibit from the Station was shown at a number of fairs and members of the staff addressed a number of agricultural meetings. Field Days and a special Farmers Day at which some two thousand people were present, were held during the year.

# EXPERIMENTAL STATION, CAP ROUGE, QUE.

The year 1923 was colder, drier and duller than the average of the last seven years. Most crops, however, were fairly good with the exception of

timothy hay, Swede turnips, and some garden crops.

A feature of the work at Cap Rouge, or rather at the Horse Farm at St. Joachim which is under the control of the Cap Rouge superintendent, is the breeding of the French-Canadian horse, in which remarkable success is being obtained as noted by the fact that in 1923, twenty-nine first prizes, all diplomas and the Godin cup were won. With French-Canadian cattle, more first prizes were won than by any other herd. Experimental work is conducted in breeding, feeding and housing poultry. The most important work is that of breeding.

The work in field husbandry comprises experiments in soil and crop manage-

ment, including the use of fertilizers.

In cereals and horticulture, a wide range of variety testing is being carried

on as well as some breeding work.

During the year a creamery was built, considerable fencing erected, and some draining and clearing done. A large number of excursionists visited the Station during the year.

# EXPERIMENTAL STATION, LA FERME, QUE.

Nineteen twenty-three was one of the most unfavourable seasons ever experienced in the district. Spring was late and no seeding was done before the 25th of May.

With live stock, horses are kept only for the Station work, no experiments having yet been undertaken. The dairy herd is made up of pure-bred Ayrshires and Ayrshire and Holstein grades. The sheep are composed partly of pure-bred Cheviots and the remainder grades, they being utilized for experimental work both in the production of lamb and mutton and of wool. With swine, there is a considerable demand for breeding stock from farmers in the district. the remainder being kept for experimental feeding.

The field crops were all much below the average on account of weather conditions. During the year, thirty-eight acres were cleared bringing the total

cleared area of the Farm up to 238 acres.

Extensive tests of varieties were carried on with forage plants and in horticulture.

The flock of poultry has become well established and some excellent experimental work is being done.

During the year the sheep shed was built and the reconstruction of the piggery was finished, as well as repairs to various buildings.

Exhibits were sent to several neighbouring points.

# EXPERIMENTAL STATION, KAPUSKASING, ONT.

Seeding commenced on May 1, the earliest date on record at this Station. Growth, however, was retarded by drought until after June 22, and snow after

the middle of September made harvesting very difficult.

The present dairy herd at the Station consists of pure-bred and grade Ayrshires, and the beef herd of grade Shorthorns. The entire herd at the Station is accredited. With sheep, considerable experimental work was conducted and a large number of young rams were sold as breeding stock to settlers. The same may be said of swine. With horses, no breeding work has yet been undertaken.

In field husbandry, the yields in 1923 were higher than those in previous years due to more favourable weather conditions. Some of the experimental work being carried on is to ascertain the best mixtures of grain, the best rates of seeding, crops best suited to the district, study of rotations, cultural methods.

etc., etc.

The work with horticulture includes the testing of varieties of tree and small fruits, vegetables, shrubs, and flowers.

With forage crops and cereals, variety testing was carried on.

The experimental work with poultry is along the lines of breeding, feeding, housing and general management methods. There was a considerable sale of cockerels for breeding purposes and eggs for hatching.

While the yield of honey was light, the bees came through the winter in

excellent condition.

During the year a new log sheep barn and log poultry house were constructed, considerable repairs done, as well as fencing and farm roads made.

During the year, five Illustration Stations were opened, these to be under the supervision of the superintendent.

# EXPERIMENTAL STATION, MORDEN, MAN.

The year 1923 was the poorest on record for the farmers of the Morden district, owing to cold spring weather followed by hot dry weather. Sever damage from rust resulted.

In live stock, work is conducted with Percheron horses, Ayrshire dairy cattle, and Hampshire sheep, records being kept of cost of maintenance and young stock being sold at moderate prices. Some excellent dairy records are being made.

In field husbandry, two new rotations thought possibly suitable to southern Manitoba were commenced during the year. With cereals and forage crops.

variety tests were conducted.

Horticulture, as heretofore, was made a special feature of the work of the Station, and some excellent work is under way. Three trial orchards have been established and a new greenhouse has been erected. With vegetables, much variety testing work was conducted and the ornamental planting has been extended.

With poultry, the object in view is high egg production with preservation of standard sizes and colour of plumage of Barred Rocks and Single Comb Rhode Island Reds.

A number of meetings were addressed and exhibits made by the superintendent and his assistants during the year.

# EXPERIMENTAL FARM, BRANDON, MAN.

Spring was late and no seeding was possible until May, while growth was backward until June. Later a very severe attack of stem rust in wheat

occurred, which cut the crop to less than half of what it would have been. Other crops were somewhat affected by rust, but on the other hand, the returns from these were satisfactory. Early fall frost did some damage to the corn crop.

The herd of dual purpose shorthorn cattle continues to imporve by breeding and selection. Experimental work in steer feeding was continued, and the trench silo dug as an experiment in 1922 has proved such a success as to attract attention and many enquiries not only from Manitoba but from adjoining States of the Union.

With swine breeding, work has been continued with a view of the formation of a bacon type of hog.

Breeding work was continued with Clydesdale horses and Oxford Down

sheep.

In field husbandry the rotation work was again interrupted by the flooding of the Assinboine river. A wide range of cultural experiments with grain and forage crops was conducted, and also tests of varieties of both these. In horticulture special attention is given to experimental work with potatoes. Variety test work was also carried on with other varieties of vegetables and small fruits. In tree fruits the hardy plums and crab apples are giving good results, but not yet the standard apples.

Progress is to be reported in the development of good utility strains of Barred Rocks and White Wyandotte. The average egg production is showing steady increase. The fourth year of the Manitoba Egg Laying Contest was completed on October 30 with a greatly increased production over previous

years.

An exhibit was sent to a number of the local fairs in the province, and also to the provincial exhibition and the horticultural show at Brandon. The superintendent and his assistants also addresed a number of agricultural meetings and wrote a number of papers on agricultural subjects.

# Experimental Farm, Indian Head, Sask.

The season of 1923 was remarkable for heavy precipitation during the latter part of June and the month of July. However, only fair yields were obtained, except with hay, which was a good crop. Damage from rust and other diseases

was serious with the grain crops.

The breeding of Clydesdale horses is a feature of the work at this Farm. Four fillies won one first, one third and two ninth prizes at the Royal Winter Fair in Toronto and the same at the International at Chicago, both in competition with some of the best specimens of the breed on the continent. With cattle the Shorthorn breed is kept. The herd at present consists of sixty-seven pure breds and also sixty steers on feeding experiments. The object with the purebred herd is to develop good beef lines together with profitable milk production. Extensive feeding experiments were carried on with this herd during the year.

Breeding operations were continued with both Yorkshire and Berkshire swine with improvement in both strains from the standpoint of the bacon hog. Comparison of various pastures and of self feeders with feeding by hand were made.

With sheep pure-bred Shropshires and grades are kept.

In field husbandry a considerable number of rotations are under way,

together with a wide range of cultural experiments.

Variety tests with cereals, and forage crops were conducted together with small fruits and vegetables. With tree fruits, hardy plums and crab apples yielded very well, but although some seedlings and hybrids of standard apples have started to fruit and show hardiness and good quality, nothing definite as yet can be said as to these.

The work with poultry is confined to the White Wyandottes and an excellent strain is being formed here. At the Saskatchewan Egg Laying Contest, conducted at this Farm, a distinct improvement in yield is noticed each year from the birds entered therein.

During the year exhibits were made at a number of points and the super-intendent and his assistants did considerable work in classes of live stock.

judging, delivering addresses, writing agricultural articles, etc., etc.

# EXPERIMENTAL STATION, ROSTHIRN, SASK.

Early drought caused premature heading out of early and early sown

varieties, but the latter ones yielded very satisfactorily.

During the winter of 1922-23, sixty-six steers were fattened comparing sunflower silage with turnips, and during 1923-24 the same experiment is being repeated with fifty-nine steers. In both years so far the ensilage is showing a considerable advantage.

From the excellent small herd of Holsteins on the Farm the average yearly production for eight cows that completed the R.O.P. test was 13,608 pounds of

milk and 458.5 pounds of butter fat.

The present flock of sheep is a high grade one evolved from a flock of grade ewes and Leicester rams. The principal work being done is an attempt to solve the problem of goitre in young lambs.

With swine the Berkshire and Tamworth breeds and their crosses are being compared as to the production of marketable hogs of a desirable type, and

pasture experiments are also being carried on.

The work with rotations and cultural experiments is being continued, the former especially with a view to the prevention of soil drifting and extermination of weeds. In horticulture marked progress has made and 1923 was notable for the high yield of apples, none of them, however, being larger than crabs.

The usual test of variety work was conducted with cereals and forage crops. During the year the superintendent addressed twenty-one public meetings and a display of farm produce was made at some of the local fairs. A considerable number of excursions and picnics took place at the Station during the year, especially in the month of July.

# EXPERIMENTAL STATION, SCOTT, SASK.

The summer of 1923 was favourable throughout northwestern Saskatchewan,

resulting in yields above the average and good qualities of grain.

The Shorthorn herd at the Station now number thirty head. With horses the Percheron breed is kept, and these animals are used both for breeding work and for doing the work on the Station. With swine comparative feeding experiments were conducted, and also with the flock of sheep.

In field husbandry, the work comprises the comparative study of rotations.

their suitability, rates and costs and cultural experiments.

The work in horticulture, as is customary at this Station, gave excellent returns from vegetables and small fruits. With cereals and forage crops the customary test of varieties was conducted. With poultry and bees work was continued, the former comprising feeding, housing and breeding experiments. With the bees a comparison in wintering was made between wintering in the cellar and wintering outdoors.

An exhibit from the Station was made at six fairs, and a number of addresses

were delivered during the year by the superintendent and his staff.

# EXPERIMENTAL STATION, SWIFT CURRENT, SASK.

Experimental work at this Station is now fairly under way. The season of 1923 was one of the wettest on record, the precipitation for May, June, July being 12.88 inches, as compared with a 38-year average for these months of 7.35. There was thus a heavy growth of straw and some crops lodged, while there was a certain amount of damage from rust, but wheat yielded 30 bushels per acre and oats 70 bushels per acre. In field husbandry the cultural experiments started in 1923 were continued, as was the test work with cereals and forage crops. In animal husbandry a herd of Shorthorns has been well established, it now comprising twenty-three animals.

During the year two cottages, an implement shed and work shop and two portable granaries, also a cattle stable, were constructed, and an abundant supply

of good water was obtained.

# EXPERIMENTAL STATION, LETHBRIDGE, ALTA.

Work on the land commenced the second week in April. Conditions during the growing season were fair, and a good yield of high grade wheat resulted. The western half of southern Alberta may be regarded as having obtained a wonderful crop in 1923, and most of the remaining part of good crop with the exception of a small area in the sou houst. A few small localities suffered during

July and early August from hail storms.

With live stock, experimental work was conducted with various for ding tests for steers and lambs and the pasturing of sheep on the forest reserve was continued. With poultry the Barred Rock is the only breed kept and an excellent laying strain has been developed. During 1923 some outstanding records were made. One pullet hald 315 eggs in 365 days; 20 pullets averaged 229 eggs each, and fifty pullets 211. The average for all pullets kept for the year was 200 eggs per bird.

The Alberta Egg Laying Contest is being conducted at this Station and

is causing great interest.

Beckeeping is becoming a commercial proposition in the irrigated section of southern Alberta, and is being given special attention on the Station, the number of colonies in 1923 being over thirty and the average production of extracted honey 190 pounds per colony.

The retation work on both the dry and irrigated farms was continued during the year, there being eight rotations under trial on dry land and three

under irrigation.

With cereals, forage crops and in horticulture variety tests were conducted under both conditions and considerable data of value were gathered in connection with duty of water.

# EXPERIMENTAL STATION, LACOMBE, ALBERTA

The crop year here was remarkably good, owing to abundant moisture.

warm weather and an ideal harvest season.

With horses breeding work has been continued here for a number of years with the Olydes lale, while during the year pure-bred Shires were added, creating a great deal of interest in the district. These latter animals were the gift of the Shire Horse Association of Great Britain. With beef cattle, the Aberdeen Argus is kept, and during the year a number of prizes were obtained

With darry eartle the Holstein is the breed kept, the herd now totalling anyther lead. Fourteen pure-bred Holsteins gave an average of 15.737

pounds of milk and 65.1 pounds of butter for the year.

With sheep a grading up experiment is being carried on, using pure-bred Leicester sheep. Cheviot, Carriedale, Oxford, Hampshire and Shropshire rams on range ewes. The good results of this work are already becoming evident.

With swine, the Yorkshires. Berkshires and Duroc-Jerseys have so far been kept, but the last named is being discarded. The object of the work is the production of the bacon type of hog and the Duroc-Jersey does not seem capable of producing this.

In field husbandry there are now thirteen rotations under test, together with a large number of cultural experiments and soil moisture yields requiring

some 480 plots in all.

The season was ideal for horticulture, but the vegetables and bush fruits yielded well. The native Manitoba plums produced a fair crop, but none of the other recently planted tree fruits have come into bearing. With cereals and forage crops the usual test of variety work was conducted.

With poultry, White Wyandottes and Barred Rocks are the two breedkept. All the bens were trapnested and a start was made in pedigree work.

To meet the increesed interest in beekeeping in central Alberta special

attention was given to this work and considerable information acquired.

During the year the Superintendent and his assistant addressed forty-two farmers' meetings and wrote a large number of articles for the press, while an exhibition was taken to some ten fairs.

# EXPERIMENTAL STATION, SUMMERLAND, B.C.

The season of 1923 throughout the Okanagan was favourable both to agriculture and horticulture. Good weather prevailed during harvest periods and there was no severe weather until the end of December.

With live stock, a commencement has been made with Cheviot sheep and Berk-hire swine, while a small Jersey herd has been established. The horses on hand are used for farm work only, no experimental work being

attempted.

Horticulture, of course, is a main feature of the work at this Station and special attention is given to the study of orchard soil problems and to experiments in the storage of apples, the latter with a special view to the efficiency of common or air-cooled storage as a means of prolonging the life of the apple.

In field husbandry, a seven-year rotation has been put under way. With

cereals and forage crops, variety and strain tests were continued.

Twelve Illustration Stations located in the central and southern interior of

British Columbia are administered directly by the superintendent.

The Station attended three local fairs with exhibits during the year, and a number of addresses were given to farmers' meetings by the superintendent and his assistants.

# EXPERIMENTAL STATION, INVERMERE, B.C.

The season was mild with abundant precipitation and hence good erer yields.

In animal husbandry very little experimental work was attempted eving to lack of land. However, a start was made in establishing a herd of Ayrshins by acquiring some good females and a young bull. Yorkshire swin also

kept on the Station.

In field husbandry, four rotations are being conducted at the Station with a view to maintaining soil fertility and adaptability to farming practices throughout the district. Variety tests with cereals, forage crops, and i enticulture were conducted, along with cultural experiments with the latter, especially with potatoes.

The work with poultry is proving very successful and pedigree trap-nesting is followed with both Wyandottes and Leghorns. In the apiary, six colonies came through the winter and during the season 502 pounds of honey were extracted.

The Station exhibit was shown at eight points and the Superintendent delivered a number of addresses during the year. No building operations were undertaken.

# EXPERIMENTAL FARM, AGASSIZ, B.C.

The spring of 1923 was one of the earliest on record but was rather uncertain and was followed by drought and heat. Early sown crops, however, gave an excellent yield and one of the best crops of hay grown in the district was

harvested in July.

The Clydesdales are kept and bred at the Station and the eighteen head of purebreds again made an excellent showing at New W-tminster. The dairy herd consists of seventy-four head of pure-bred Holsteins. Twenty-seven cows finished their lactation period during the year with an average of 12.371 pounds of milk and 540 pounds of butterfat. A larger output than ever was made of Stilton, cream, Cheshire and Meilleur cheese, and a large number of milk and cream samples were tested for the farmers of the district. Approximately one hundred breeding ewes mostly of the Dorset breed were on hand, and Yorkshire swine are the breed kept.

The popularity and success of the work in poultry increases each year, the Barred Plymouth Rock and the White Leghorn breeds being kept. A considerable amount of experimental work in breeding and feeding was done and the 3rd Egg Laying Contest was conducted and was even more successful than either of the other two. The average percentage of eggs for 360 birds was

199.85; the best individual, a White Wyandotte, laid 306 eggs.

Work with field crops is limited by the amount of land for this work, and most of this was devoted to production of corn and sunflowers for ensilage and

for hay and roots.

The work in horticulture consisted of variety experiments with potatoes, vegetables, fruits and flowers, and also cultural methods. The season was so dry that yields in general were below the average.

# EXPERIMENTAL STATION, SIDNEY, B.C.

The winter of 1922-23 was cold and unusually disagreeable, but on the whole the following growing season was a good one permitting of planting under excellent conditions with a fair amount of moisture during the growing season.

A small herd of Jersey dairy cattle has been established and placed under accreditation. No experimental work was done with horses or with sheep.

In field husbandry, the rotations outlined in the previous report have been followed but are handicapped by the high price of land and difficulty in clearing the same. Tests of varieties were conducted with cereals and forage crops, both with winter and fall seeding.

Horticulture is made a specialty at this Station, and a large number of experiments were conducted in soil treatment, pruning, spraying, fertilizing,

variety tests, etc.

Poultry is also featured, and probably at no other Station is wider work being carried on or more accurate results obtained. A complete system of pedigreeing is followed and a laying contest for poultry breeders of the Island is being conducted.

The work with bees is also a feature and forms a valuable source of

information for Island bee keepers.

Several fall fairs were attended at which an exhibit of Station produce was made and addresses and demonstrations given. A large number of visitors visited the Station during the year.

### EXPERIMENTAL SUB-STATIONS

As in former years, experimental work was conducted at Fort Vermilion and at Beaverlodge in the Peace River district and a certain amount of experimental work with tree fruits especially at Salmon Arm, B.C. A limited amount of experimental work also was conducted under the supervision of the Fathers of the Missions at Forts Smith, Resolution and Providence, Northwest Territories, at Swede Creek, near Dawson, Y.T., and at Betsiamites, Saguenay

county, Que.

From the first-named two points excellent results were obtained. The work at Salmon Arm, being with newer varieties of apples, is necessarily slow in conclusion. The work at Forts Smith, Resolution and Providence was greatly hampered by a very unfavourable season, that of Betsiamites was hindered somewhat by a change of priests in charge of the mission. The work here is also preparatory in nature dealing largely with problems of soil fertility, and considering the condition of the land, excellent progress is being made. At Swede Creek for the second year in succession wheat grown on the Station was made into flour which created a great deal of local interest.

### DAIRY AND COLD STORAGE BRANCH

The record for the dairy season of 1923 presents no very striking features. Weather conditions were about normal, except in certain areas. The production of cheese shows an increase of over 15,000,000 pounds in excess of the previous year, although the complete figures are not yet available. There was also an increase in the production of creamery butter of over 8,000,000 pounds, in spite of the fact that a much larger quantity of cream was exported to the United States than during the previous year.

The average price of cheese for the season was a little over nineteen cents per pound at country points. This price is nearly 50 per cent higher than the average price in any pre-war year, including that of 1914, when the price in the autumn was raised considerably by war conditions. It is doubtful if the price of any other Canadian farm product has been so well maintained since

the war period.

The average price of butter for the season of 1923 has been placed at 33 4 cents per pound at country points, and was, therefore, relatively lower than the price of cheese throughout the season. With cheese at 19 cents, the equivalent for butter is 41½ cents, excluding the difference in value of the skimmilk and whey. The disparity between butter and cheese was never as great as at times during the past season. The prices were more on a parity towerds the end of the season.

On the whole, the dairyman in 1923 was in a better position than those

who depend on other crops.

The total exports of dairy produce for the calendar year, plus excess of holdings, show an increase in fat equivalent of 1.733,532 pounds as compared with 1922, while the value of the exports, plus excess holdings for the same period, shows an increase of \$5,215,818.

The most outstanding feature of the dairy situation in Canada at the present moment is the strong tendency towards dairying in the prairie provinces.

Recognizing the importance of the competition which Canada is meeting from New Zealand and Australia, it was decided to send Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner, and Mr. W. A. Wilson, then Manager of the Saskatchewan Co-operative Creameries, on a visit to these countries to study the conditions and methods which are followed there, and to report on the prospects of further competition from that source. They left Canada on January 26, 1923, and returned on April 21, 1923. The Dairy and Cold Storage Commissioner prepared a full report of the trip, which was published as bulletin 34, and which may be obtained on application to the Publications Branch of this department. This report points out very clearly the urgent need for Canadian dairymen to take advantage of every opportunity for improvement if they are to successfully meet the ever growing competition from the southern hemisphere.

Mr. G. H. Barr, who has been on the staff of the Dairy Branch for seventeen years, and Chici of the Dairy Division since 1909, resigned his position at the end of February and left the service, with a good record behind him.

### REORGANIZATION

The Dairy Branch has recently been somewhat reorganized. A beginning was made in the creation of a Division of Dairy Research, and Mr. E. G. Hood, B.S.A., Ph.D., was appointed to the position of Chief of the Division. It is hoped that this division may be helpful in solving some of the problems which butter and cheese makers have to contend with from time to time.

In order to deal with the large increase of work involved in the grading of dairy produce since the Dairy Produce Act and Regulations came into force on April 1, 1923, a new "Division of Dairy Produce" has been established. This division will deal with grading, educational scoring contests, grading classes, judging at exhibitions, etc. The Dairy Division has been renamed "Division of Dairy Manufactures". It will have to do with all activities of the Branch relating to the manufacture of butter, cheese, and other dairy products, the operation of the government dairy stations, etc. The Cold Storage Division has been merged with the Extension of Markets Division, which will hereafter be known as the "Division of Dairy Markets and Cold Storage". The administration of dairy laws, which has been under the Extension of Markets Division, will be disassociated from that division and the work carried on as a separate "Service".

The cow testing work which has been carried on by the Dairy and Cold Storage Branch since it was first started in 1904, has, by mutual arrangement, been transferred to the Live Stock Branch. It has been felt for some time that the Dairy Branch did not have the requisite machinery and organization for carrying on this work to best advantage, and the Dairy and Cold Storage Commissioner has frequently asked to be relieved of it. The Live Stock Branch is in closer touch with the live stock owners of the country. The transfer was made on March 31, 1924.

### CREAM GRADING

There is a very general movement throughout the provinces towards the grading of cream for butter making. Cream grading is now well established in Alberta, Saskatchewan, Manutoba and Nova Scotia, and a good start has been made in Ontario and Quebec. While the grading of cream is a matter which comes under the jurisdiction of the provincial authorities, the Dairy Branch has assisted in every possible way to introduce this important reform in the creamery industry, and to co-ordinate provincial effort along this line.

### EXTENSION OF MARKETS DIVISION

The iced car services for butter and cheese were again arranged for with the railways, and supervised by the inspectors under this Division.

The cargo inspectors were employed as usual at Montreal during the season of navigation, at Halifax throughout the year, and at the ports of St. John, N.B., and Portland, Me., after the close of navigation at Montreal until the end of January when the shipment of perishable products practically ceased.

Inspectors are still stationed in the United Kingdom at the ports of London, Bristol, Liverpool, Manchester, and Glasgow. Thus cargoes of perishable products are inspected as to condition, temperature, packing, etc., both at the point of loading and at the point of discharge. Detailed reports are made on every shipment, and recording thermometers are placed with all such cargo, the records of which, along with other information contained in the reports, are made available to all interested persons.

### DAIRY DIVISION

### THE GRADING OF DAIRY PRODUCE

The Dairy Produce Act and Regulations came into force on April 1, 1923. Some preliminary grading was done in 1922, mainly for the United Dairymen Co-operative, an organization selling cheese by auction at Montreal. The following quantities of cheese and butter were graded during the calendar year of 1923:—

CHE	DESE-	ALL	CAN	ADA

Province	Number Boxes	Per cent Specials	Per cent First	Per cent Second	Per cent Third
Ontario	909,227 533,151 15,751	0·9 1·2	83·0 68·0 62·4	14·2 28·1 37·1	1.9 2.7 0.5
Numi er l'oxes different grades	,	0·97 14,173	77·03 1,123,157	19·78 288,338	2·22 32,461

### BUTTER-ALL CANADA

### PASTEURIZED

Province	Number Packages	Per cent Specials	Per cent First	Per cent Second	Per cent Third
Alberta Saskatchewan	39,074 50,961 12,403 15,479 91,572 1,044	17·3 6·1 4·8 37·2	68.9 49.3 78.0 66.1 53.5 96.3	12.8 38.6 21.8 24.1 8.7 3.7	1.0 6.0 0.2 5.0 0.6
Number boxes different grades	210,533	21·2 44,582	57·8 121,856	18·7 39,239	2 3 4,856

### UNPASTEURIZED

Province	Number	Per cent	Per cent	Per cent	Per cent
	Packages	Specials	First	Second	Third
Ontario Quebec Maritime  Total Number boxes different grades	4,441 263,786 3,762 271,989		\$.0 45.1 62.8 170,668	34·2 93,239	36.0 2.3 8.8 3.0 8,082

Montreal is naturally the principal centre for the grading of dairy product for export, and the bulk of the grading is done there. A Dominion Dairy Produce Grader was stationed at Belleville for central Ontario, one at Stratford for western Ontario, and one at Charlottetown for Prince Edward Island. An arrangement was made with the provincial departments of agriculture for Manitoba, Saskatchewan, and Alberta, to have the provincial graders as dominion dairy produce graders as required for the grading of butter intended for export.

No attempt was made to place any marks on the butter or choose packages indicating the grade in which the respective lots had been placed. The grade certificates have served in some measure to identify graded lots through the churning numbers and vat numbers entered in the certificate. Amended regulations now provide for the marking of grades on the packages, and although there are serious practical difficulties in the way of carrying out this marking, it is believed to be desirable that it should be done, and it is hoped that some

way will be found of doing it.

The export trade in dairy produce from Canada has been long established and the method of handling, the arrangements of warehouses, etc., have become firmly fixed. It was felt to be undesirable to introduce any system that would cause serious dislocation or interruption to the established practices unless them were good reasons for doing so. In grafting the grading system on the export trade the department has endeavoured to permit the handling of dairy produce along the usual lines as far as possible, and to accommodate the grading system to existing conditions with a minimum of disturbance. It may be necessary in the interests of the trade and to protect the grading so as to establish confidence therein, to make some changes in the future. On the whole the grading of dairy produce for export has been inaugurated with very little difficulty and without friction with either the exporters or the producers.

### REGISTRATION OF FACTORIES

The registration of all cheese factories and creameries, which has now been carried out, and the requirement that after May 1, 1924, all packages containing butter and cheese shall bear the registered number of the factory, will greatly assist in the identification of different lots of butter and cheese, and enable the dairy produce graders and others to correspond more effectively with the authorized representatives of the different factories.

### MILK UTILIZATION SERVICE

This service was strengthened during the past year by the addition of an assistant demonstrator and lecturer who speaks French as well as English. A large number of publications on the use of milk and its products were distributed through provincial organizations, Boards of Health, Departments of Education, Child Welfare Associations, etc.

Exhibits and booths, where the food value of milk products was demonstrated, were erected at eight of the leading agricultural exhibitions in Canada during the past year, and also at the Exposition of Western Canada Farm

Products promoted by the T. Eaton Company at Winnipeg.

Addresses have been given by the Demonstrators at the World's Dairy Congress at Syracuse, at various national, provincial and local meetings of women's institutes, chald welfare organizations, educational associations, dutrymen's associations, and at nine of the normal schools in Ontario and Quebec.

Some work has been done in the public schools by encouraging milk poster competitions, and a close connection has been established with the various child welfare, public health, women's institutes and other organizations throughout Canada.

### FINCH DAIRY STATION

The Finch Dairy Station had another successful year. Over eight million pounds of milk were received, making it the largest whole milk choese and butter factory in Canada. There was manufactured 148,479 pounds of choese, and 20,302 pounds of butter while 210,579 pounds of butter fat were sold as cream, and 107,156 pounds of whole milk were disposed of. The total value was \$149,598.14. The average net payment to the patrons was \$1.62 per 100 pounds of milk. The quantity of milk received during the four winter months. December to March inclusive, 1922-23, was 1,731,869 pounds. In the same period in 1912-13 (first year of operation) the receipts were only 208,937 pounds.

### DOMINION EDUCATIONAL BUTTER SCORING CONTEST

The educational butter scoring contests, in which samples of butter from creameries selected by the provincial authorities in the different provinces are sent to Montreal once a month throughout the season, was repeated in 1923.

An educational cheese scoring contest along the same lines was inaugurated in 1923 and created considerable interest among the cheese factories.

The objects of these contests are to secure uniformity in type and character of the butter and cheese manufactured in different parts of Canada. It has been demonstrated through this work that just as good butter can be made in one part of the country as another, and that it is possible for every part of Canada to make the very highest grade of creamery butter. The cheese contest was naturally confined very largely to Ontario and Quebec, with a few samples from New Brunswick and Prince Edward Island.

### DAIRY NEWS LETTER

Publication of the monthly Dairy News Letter was continued. This publications affords a medium through which information as to world's conditions in dairying, the progress of the industry in Canada, and any items of interest to those engaged in the manufacture of butter and cheese in Canada can be disseminated promptly and directly to those who are especially interested.

### DAIRY MARKET INTELLIGENCE

A weekly Dairy Market Letter is mailed every Monday to every cream ry and cheese factory in Canada and to any other person who makes application to be placed on the mailing list. This letter is published only from April to December.

In addition to the Market Letter, paid telegrams are sent out regularly on Mondays and Fridays to officials in the various provinces and districts, and collect telegrams are sent to any person who makes application for them

This market information seems to be appreciated by creameries and cheese factories, especially in outlying parts of the country.

#### MEETINGS

The commissioner and the staff of the Dairy and Cold Storage Branch have attended numerous dairy conventions and other meetings throughout the year. Some special meetings were held during the winter to which cheese makers and factory operators were invited with a view of becoming familiar with the methods and standards followed in the grading of dairy produce. A number of the dairy produce graders were assigned to this work and samples of cheese of different types and grades were taken along for examination by those in attendance.

### HEALTH OF ANIMALS' BRANCH

In this branch the year just passed has been a busy one, although fortunately the extra pressure has not been due to any serious or wide spread outbreaks of disease within our borders.

Unfortunately, very serious outbreaks of foot and mouth disease have been occurring in Great Britain with dangerous regularity for some time, and quite recently this disease has been detected in the State of California, the infection having been introduced from foreign sources through the port of San Francisco.

It has been necessary to prohibit the importation of cattle, sheep, goats, swine, poultry, and dogs, with the exception of toy dogs, from Great Britain and Ireland.

The British Ministry having placed an embargo upon the importation of cattle, sheep, goats and swine from all the States of the Union, it was further necessary, in order to protect our British market, to enforce a similar order. As it is essential to protect the reputation of Canadian animals, the transit shipment of American animals through Canadian territory has been prohibited, as well as the transit of Canadian animals through the United States.

More stringent measures are being enforced with regard to the infected State of California, and its two bordering States, Nevada and Oregen. The importation of cattle, sheep, swine, goats, dogs and poultry, or of the flesh, hides, horns, hoofs, or other parts of such animals, or of hay, straw, fodder, or manure originating in, or which have been within, any of these three States has also been absolutely prohibited.

Foot and mouth disease is one of the most contagious of all known maladies, and one transmissible to a remarkable degree by indirect channels of many different kinds. There is consequently always a danger of the infection being introduced, and this is very much enhanced when this disease exists in the United States.

The enormous losses resulting from an invasion of this disease are well known, and while the enforcement of precautionary measures cause a great deal of annoyance, inconvenience and financial loss to importers, and others, these losses are infinitesimal when compared with those resulting from an invasion of the disease. It has therefore been incumbent upon the department to enforce absolutely all possible precautionary measures.

The commendable promptness and energy with which the initial outbreaks were dealt with by the American authorities will, I hope, result in the early eradication of the disease.

The British regulations governing the shipment of Canadian stores, which have been in force since the removal of the embargo on April 1, 1923, have been carefully complied with. A close supervision has been maintained over

all shipments from point of origin to the British market. This has necessitated the sending of approximately sixty veterinary inspectors to England whose services were not available for their regular duties for periods varying from six weeks to two months. Approximately 28,500 stores left our shores for the British market during the period covered by this report, and all these animals passed the rigid inspection for health conducted by the British officers.

Although the supervision of these shipments entailed a great deal of additional work, what may be termed the ordinary duties of the staff, namely the work of controlling animal diseases with a view to their ultimate eradication, that of maintaining a strict quarantine against the introduction of infection from other countries, and that of research and experiment have all been carried on in a satisfactory and effective manner. The details of the work performed in these various lines are briefly dealt with below, and will be found fully set forth in the report of the Veterinary Director General, which will be issued as a separate publication.

It has not been found necessary in the past year to crect any new quarantine stations, nor have any changes been made in the quarantine regulations, except, of course, those above outlined. These are temporary measures, and

will be rescinded as soon as it is safe to do so.

The compulsory slaughter and compensation policy which has been followed for many years in dealing with outbreaks of glanders has practically eradicated this very serious disease of horses. Outbreaks occur occasionally, but they have in recent years been very limited, and have been promptly controlled. During the past year only one outbreak was dealt with, and this was located in the province of Quebec.

A similar policy has been followed in the control of hog cholera with marked success. The system of inspection of licensed garbage feeders has resulted in prompt notification of this disease, which has made it possible to

deal more promptly with outbreaks.

Small outbreaks have occurred in the Provinces of Ontario, Manitoba, Saskatchewan and British Columbia, which necessitated a total slaughter of

581 hogs.

The control of bovine tuberculosis is a most difficult problem largely due to the chronic tendency of this disease. It is not possible to detect this malady by physical examination, except in very advanced cases. The great majority of infected cattle show no signs of illness, and it is only by the administering of the tuberculin test that they can be detected. Compulsory regulatory measures are therefore impracticable, and it has been necessary to exercise caution in selecting policies for its control. As however, it is essential to protect our foreign markets in countries where active measures are being carried on, and realizing the great economic losses resulting from bovine tuberculosis, as well as the humanitarian aspect of this disease, it is advisable to take all possible, practicable measures for its control.

In view, however, of the enormous cost involved this work must necessarily be limited, and it is important that only those policies are selected which give

the best returns for the money expended.

Experience having shown that under the provisions of the Municipal Tuber-culosis Order, satisfactory progress was not being made in the control of this disease, it was decided that the department would not be justified in accepting

any more applications for assistance under this order.

As, however, a large number of applications had been received, an opportunity was given to the municipalities in which the testing of cattle had not been commenced to apply for assistance under the Restricted Area plan, but they did not see fit to take advantage of it.

The policy of eradicating this disease in pure bred herds, and maintaining them free from it, known as the Accredited Herd plan, is giving good results, and is becoming very popular in districts where the stock men are most familiar with it. It was, however, necessary, in order to limit this plan to pure bred herds, to require that there should be a definite number of registered cattle in the herd before accepting it for accreditation. This number was at first placed at twelve, and as it practically eliminated the many owners of small heads who desired to take advantage of this policy, it was afterwards decided to accept herds containing at least five registered cattle, one of which must be a herd sire.

Under this plan 2,648 pure-bred herds are now being dealt with and 908 of these herds have already been fully accredited as tuberculosis free herds. It was necessary to conduct 119,551 tuberculin tests, and 7,153 cattle were found to be tuberculous, necessitating the payment of 8539,414.66 in compensation.

This plan is most popular in districts where the stockmen are most familiar with it, and although every effort is being made to deal promptly with all applications for accreditation, they have been too numerous to permit of immediate action in all cases.

The Restricted Area plan has many advantages over other tuberculosis policies, in so far as under the regulations governing this plan all cattle of all classes located within a specified territory are tested with tuberculin as often as is considered necessary, and diseased animals slaughtered. It is therefore possible by careful organization to carry out the testing of cattle in the most expeditious and economical manner. It is further possible to destroy all infected centres, and in this way to provide a clean area for the healthy herds.

All reasonable measures are taken to maintain such an area free from infection. Cattle coming into this area, except for transit through the area, or for immediate slaughter in the area, must first pass a tuberculin test conducted by one of the department's officers. Those for transit through the area must be unloaded for feeding purposes at special designated points, where they cannot come in contact with the area cattle, and the same conditions apply to those for immediate slaughter within the area.

An area in Manitoba comprising three townships in the Carman district is being dealt with under this plan. The first test was commenced on February 1, 1923, and a total of 16.550 cattle were submitted to tuberculin; 918 of these reacted, or 5.57 per cent, necessitating the payment of \$32,830 in compensation. All herds from which reactors had been removed were retested after a period of 60 days clapsed. There were 344 of these herds, which contained 5.990 cattle, and 97 animals reacted, or 1.6 per cent. These animals were slaughtered, the premises disinfected, and \$3,128 paid in compensation.

The second general test of all cattle in this area was completed in October last. There were 15,600 cattle in the area at this test, and 87 of these reacted, or .55 per cent, for which \$3,154 was paid in compensation.

These figures show that it is possible to eliminate the greatest number of diseased eattle at the first test, and that with the continued support of the stockmen infection will be ultimately eradicated from this area. It will, however, require the utmost vigilance and perseverance to maintain this area free from tuberculosis.

The supervised plan for the eradication of this disease is still available to stock-owners who cannot take advantage of the other policies. Under this plan no compensation is paid, but the Department places at the disposal of the owner the services and advice of its veterinary officers free of charge. Every effort is made to clean up such herds expeditiously, and in the best interests of the owner, and to maintain such herds free from tuberculosis.

More trouble has again been experienced with mange in cattle, the largest number of outbreaks occurring in the Prairie Provinces.

Although the disease was detected in not more than 414 animals, it has been necessary to quarantine for treatment as contacts 39,234 cattle. Experience has shown that it is essential, in order to control this disease, to quarantine and treat all cattle which may have been in contact with infected herds.

Unfortunately the large majority of stock men do not thoroughly appreciate the great importance of promptly notifying the department's officers at any time they detect skin irritation in their cattle. Practically all of these cases during this period have been discovered by officers of the department, and in many instances it has been found that animals had been shipped from infected herds

to other districts, and also to other provinces.

This has necessitated a great amount of investigational work, and caused unsuspecting purchasers much trouble, expense, and annoyance. It is, in view of our export trade, most important to control this disease, as if mange is found in Canadian cattle in our foreign markets, this trade will be promptly terminated. It is, therefore, highly essential that stockmen in their own interests, as well as those of our live stock in general, should notify the Department immediately they observe any symptoms of this disease in their cattle, or those of others.

All infected and contact animals have been quarantined, and are being

treated under supervision as expeditiously as circumstances will permit.

Mange in horses has not at any time been prevalent in Canada, but outbreaks of this disease have not been uncommon during the past year. The majority of these outbreaks occurred in the provinces of Manitoba and Saskatchewan. A total of 61 horses were found to be actually affected, requiring the treatment of 483 contact horses in addition to the infected ones.

Sheep scab has only been detected in the provinces of Alberta and British Columbia; three outbreaks having been dealt with in the former province, and one in the latter. All infected and contact sheep, numbering 21,497 animals, have been quarantined, and are undergoing treatment under supervision.

Rabies and dourine, two very serious diseases of live stock, have not been detected in this country during the period covered by this report, while only one outbreak of Anthrax has been dealt with, and this occurred in the province of Quebec.

Careful and systematic supervision has been maintained over the stockyards throughout this country, and they have been cleansed and disinfected, as well as all stock cars, at frequent intervals.

### PATHOLOGICAL DIVISION

This division has accomplished a vast amount of laboratory routine work and has engaged in special investigation and research to the utmost limitations of existing laboratory accommodation and equipment. Five laboratories are maintained under this division, the main one being located in Ottawa, with the Chief Pathologist in charge.

### BIOLOGICAL LABORATORY, OTTAWA

The manufacture and preparation of tuberculin, mallein, and other biological products has continued throughout the year and with an increasing demand and supply.

Tuberculin.—637,596 doses of tuberculin, as required for the subcutaneous, intradermal and ophthalmic tests, have been issued, being an increase of 155,494 over the previous year. This tuberculin is distributed throughout Canada for use in Government testing for tuberculosis.

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Mallein.—10,860 doses were issued for use by veterinary inspectors for the diagnosis of glanders in horses.

Anti-abortion Vaccine.—133 doses were issued for the experimental treatment of infectious bovine abortion.

Disease Diagnosis and Laboratory Examinations.—Cadayers, pathological specimens, parasites, samples of blood, scrum, milk, meat, cannot fouris, etc., have been received from Government inspectors, practising veterinarians farmers and live stock owners, 1,213 of such specimens have been reported on, an increase of 557 over the previous year.

Special In a tigations and Research.—Losses, diseases and problems affectaing live stock are investigated by the pathologists co-operating with manarians, Experimental Farm officials and the owners concerned.

Museum Specimens.—A collection of pathological specimens has been exhibited at various places in the provinces of Ontario and Quebec for clustional and public health purposes. This exhibit has attracted much favourable comment and several requests have been received for similar sets of specimens, which, unfortunately, we are unable to meet.

### RESEARCH STATION, HULL, QUEBEC

At this Station, continuous research on tuberculosis is carried on.

The study of immunity reactions in tuberculous animals has enabled the pathologists to set up a new method for the standardization of tuberculin, which was very urgently needed in view of the importance and wide appplication of tuberculin testing of cattle in the Accredited Herd Plan.

Various strains of tubercle bacilli, originating from the cattle, buffalo, swine and pulltry, are maintained and the different properties and characteristics of each are under investigation.

Some preliminary experimental work has been done on tuberculosis vaccination and immunization, with encouraging results.

Improvements have been made in the test known as the "Complement Fixation Test"—a blood scrum reaction which can be applied for the detection of tuberculosis infection.

Blood and milk tests of herds of cattle in which infectious bovine abortion exists have been made and recorded. It is intended to repeat these tests annually, or oftener, and to study the relationship between reacting cattle and the continuance of infection.

The Research Station, by an arrangement between my department and the Research Countil, maintains an experimental "Fox Ranch" for the state of foxes in captivity.

### VETERINARY RESEARCH STATION, LITTHBRIDGE, ALTA.

A study has been made on the biology of the parasites causing sarcoptic mange in cattle.

The investigation of Swamp Fever in horses has been continued further.
Routine serological tests for Dourine have been made, all with negative results. Although this disease appears to have been completely eradicated, it is considered advisable to make occasional tests as a precaution against a possible recurrence.

One hundred and seventeen specimens have been received for laboratory

examination, diagnosis and report.

A pathologist of this division attended the slaughter of surplus buffalo at Wainwright Paula, which affected an exallent apparently for a sinky of patho-

logical conditions and parasitical infestations.

### VETERINARY RESEARCH STATION, AGASSIZ, B.C.

The results of the investigation of the disease locally known under different names, such as "Timber Paralysis of Sheep" and "Kamloops Cattle Disease" strongly indicate that the condition is caused by eating the plant "Astragalus Campestris".

Further experiments have been made in connection with the poisoning of

stock by eating bracken.

Scrological tests are made and data collected with regard to Infectious Abortion of Cattle.

The study of Red Water of cattle in British Columbia continues.

The causes of losses among live stock are investigated by the pathologist from time to time. A large number of specimens are received for diagnosis and report. Piroplasmosis was detected in Indian deer imported from the Orient and held in quarantine at Vancouver.

### FOX RESEARCH STATION, CHARLOTTETOWN, P.E.I.

One of the chief problems in raising foxes in captivity is parasitical infestation. A collection and study of the various parasites affecting these animals has been made and many experiments undertaken on methods of prevention and treatment. Very good results have been obtained where the methods advised have been applied.

Other pathological conditions affecting foxes, particularly distemper, nutritional disorders and the causes of premature birth, have received attention.

Five hundred and thirty-three specimens have been sent to the laboratory for diagnosis and laboratory report, many of these specimens being careasses of foxes dying from unknown causes.

### PUBLICATIONS, MEETINGS, ETC.

Members of the staff of the Pathological Division have contributed many articles to the agricultural press, fox farming magazines and scientific journals, and have distributed in this way much valuable information. Papers have been read and addresses given at various meetings throughout the country.

### MEAT AND CANNED FOODS DIVISION

During the year just closed, a larger volume of work was carried on by the officers of this division due, in most part, to a substantial increase in the number of meat food animals sent forward to the inspected establishments for slaughter. This increase was made up through a steady for anding to the market rather than by a sudden rush in the fall, as has been too often the case in the past. This condition was, no doubt, influenced by the fine weather and good pasture during the late months, together with an abundant supply of winter feed and grain. The increase was principally in hogs, which show approximately 420,000 over the year previous. Cattle and shelp show combined decrease of approximately 150,000.

The prices paid to the producers have not been as remunerative as desired due to the slow demand in our foreign markets. Canadian bacen is Figure has begun to re-establish itself, and larger quantities of select bacom? We improve

sent forward.

Very close examinations have been given during slaughter and cure, and the inspectors have been in a position, at all times to guarantee also during the wholesomeness and freedom from discuse of all means and ment for diproducts emanating from establishments operating under the provisions of the Most and

Canned Foods Act and Regulations. Sanitary conditions of a high order in these plants have been maintained. Structural changes, additions and new modern equipment have been supplied whenever required, with the result that these plants will compare favourably with the plants engaged in similar work in other countries.

Some new establishments were placed under inspection during the year, and by the enquiries being made regarding inspection and export trade, it is safe to presume that more will be operating under the Act during the coming

year.

The people are slowly awakening to the question of public health and are beginning to pay special attention to their food supply. They have learned that no matter how anxious they may be, they are not able to protect themselves, and depend more and more upon public officials to safeguard the healthfulness of the foods consumed by themselves and those dependent upon them. This is showing itself in the increased demand in Canada for Government Inspected meats. This is also the first requisite from our foreign customers. Our complete system of inspection and the final certification are such that their exacting demands are fully met. It is felt that during the coming year we may look forward with confidence to an increased activity in the inspected slaughtering establishments, as it would appear that there is an increased production of meat food animals, which is essential to the development of agriculture in Canada.

Full and complete statistics covering the work will be published later in the report of the Veterinary Director General. These figures will show no great change from those issued in previous years, other than the increase previously mentioned. Tuberculosis and injuries such as bruises, cripples, etc., account for the greater amount of condemnations and loss. With reference to the former, it is confidently expected that this will decrease as the present policy of control and eradication is extended. As to the latter, it could be immediately reduced, if those, entrusted with the handling and shipping of live stock from the time they leave the farm until they reach the slaughter house, were alive to their responsibility and poses-sed even normal intelligence regard-

ing the care which should be given dumb animals.

The establishments engaged in canning fruits and vegetables had a fairly successful year. In some few of the products, there was a light run. On the whole however, there was an average pack. Prices for the finished articles were well maintained. This with a considerable export trade has resulted in a brisk movement of this class of foods, which has enabled the manufacturer practically to empty his plants. This condition should stimulate increased activity during the coming year. If we are favoured with a good season for growing this class of foods, the canners will undoubtedly be ready to take care of all that is offered. The sanitary conditions of the plants were kept up to a satisfactory standard. New equipment is being constantly added and with a continuance of the present co-operation, this phase of the work will steadily improve with the result that producer, manufacturer, and consumer will benefit to the extent, that it will become a very safe stable industry, from which the pessimism and uncertainty of the past will have entirely disappeared.

Material progress has been made in the quality of the products prepared. The different processors are lending themselves to a more thorough understanding and observance of the standards. The only formation upon which this industry can be built is to meet foreign competition, and establish itself at home or abroad. Every assistance is being given in interpreting these requirements, so that there may be uniformity in their methods of application

in order that the declaration of quality on these products carries the same meaning and guarantee, irrespective of geographical location or the individual

establishment in which they were manufactured.

The activity in the evaporating of fruits was sectional. Many of these plants in Ontario did not operate during the past year, owing to a short apple crop and an uncertainty of the export market, while those in the Annapolis Valley in Nova Scotia ran longer than usual and were fortunate in being able to market their products on a rising market, which developed as the season advanced. Improvement in the control of sanitation, equipment and construction of these plants has been, if anything, more noticeable than in any of those under the control of the department. The products also show an equal advance, yet it would appear that as the new process of dehydration is developed and perfected, it will displace many of the older methods of preparation such as evaporating and sun drying, as the finished product obtained by dehydration is of exceptionally fine appearance and at once appeals to the housewife as a clean, wholesome and convenient food.

A splendid export trade is being developed in condensed, evaporated and dried milks. Our manufacturers have been able to meet readily the conditions imposed by our foreign customers and are manufacturing a really high class food. No criticism can be made as to plant equipment or cleanliness, as they are

managed to meet the most exacting requirements.

### LIVE STOCK BRANCH

### HORSE DIVISION

The fiscal year of 1923-24 showed considerable improvement in the horse breeding industry. The demand for big drafters at good prices, for city work continued. Bush horses, during the lumber season were also in greater demand than for some years past. Farm horses sold steadily throughout the year, particularly in Eastern Canada. A few years ago thousands of horses were shapped to the western provinces annually. Now the tide has turned and some ten thousand western horses found a market last year in Ontario, Quebec, and the Maritime Provinces. The starting of this movement to ship horses eastward has been credited, and rightly so, to officers of the Horse Division, of the Live Stock Branch.

There is another class of horse for which there is a steadily growing market both in Canada and the United States; that is for a horse that can be used for riding and hunting purposes. There are at the present time some sixty-five hunt clubs in Canada and the United States, while the cities, and even small towns have riding clubs; in fact in some of the larger cities there are as many as eight or ten clubs with hundreds of members. Canadian bred saddlers and hunters have always found favour south of the line, and never more so than at the present time. Good green saddlers and hunters are picked up wherever they can be secured, the trouble at the present time being that the doman! far exceeds the supply. The kind most sought after are the big strong horses of type and quality up to carrying heavy weight. Such horses are also suitable for delivery, fire, police and remount work. They also make excellent farm horses. Canadian polo ponies, particularly those bred in the Calgary country are also finding a good market at remunerative prices.

The outlook for horse breeding has improved greatly during the past year, particularly in the western provinces. Economic conditions are really forcing people to use the cheapest form of power, whether it be on the farm, in the

lumber woods, or in the city, and this is supplied by horses. Hence it is, that the horse men are again taking up breeding seriously, knowing that there is bound to be a steadily increasing demand particularly as the country returns to normal conditions.

There are three types of horse which are finding a ready market; big drafters, weighing at least seventeen or eighteen hundred pounds and upwards; clean legged delivery and express horses, weighing from thirteen to fourteen hundred pounds, that can step along at a fair gait and good sa ldlers and hunters of which there is a decided shortage. Depending on conditions, these are the three types that should be bred at the present time.

#### CLUBS

There was a fair increase in the number of clubs operating under the Federal Assistance Policy in 1923 and much more interest was displayed in the horse industry during the year particularly in the western provinces. The policy of making grants to clubs that hire approved stallions has now been in existence for nine years and has done much to encourage our breeders to carry on even under unfavourable circumstances. During the war years when the prices of all other classes of live stock doubled and trebled, the prices of horses were practically cut in two. In fact, it would scarcely be said for a few years that there was a market. To this might be added the use of trucks and tractors, which, for the time being, replaced to a considerable extent horses, not only in the cities, but on the farms. Under the changed economic conditions of the last two or three years horses are steadily but surely coming back and the demand to-day is greater than it has been for a number of years. Knowing that with the return to normal conditions, horses will be again in keen demand, the wide awake horsemen are raising colts for the coming market and the club system is particularly popular in the western provinces. This policy, which has been commended both by Canadian breeders and foreign horsemen, is undoubtedly the only one of its kind in existence at the present time, whereby the owners of mares as well as the proprietors of good stallions are protected. The former are enabled to secure the services of first class horses at a very nominal fee, while the latter are assured by contract of a certain definite sum for the year's work. Thus, private individuals are able to keep good stallions without loss to themselves, while community breeding. better feeding, and up-to-date care and management are encouraged amongs: the mare owners.

There is another phase of this question which is quite evident, namely, that members of clubs use only their good, sound, young mares for breeding purposes and take better care of them. On the other hand, the stallion owner being guaranteed a definite number of mares for the season is able to spread the season's work over the whole period and thus not over breed his horse during any week. The use of better mares, together with a sane system of mating, car and management, is leaving a higher percentage of good sound, strong, healthy colts, than was ever possible under the ordinary system.

The organization of communities for the purpose of hiring the best stallions available is helpful in many ways. In the first place, there is the fostering of the community spirit of working together and of helping one another. Secondly, under club organization, it is possible to hold colt shows, horse sales and engage in other work for the promotion of the horse industry. The club system has also created a healthy rivalry between districts, in that each club is anxious to secure the best stallion possible and thus a premium is set on the good horses. The use of good stallions of the same breed for a number of years results in the rapid grading up of the horses of the district, which in turn advertises the community and attracts outside buyers.

Another point which cannot be too strongly emphasized in connection with the club scheme is the fact that all stallions hired by clubs must pass a rigid inspection by an experienced officer of the Live Stock Branch. Accordingly, only sound, individually excellent animals that possess size and the characteristics of the breed are allowed to stand for service in a club. In this way the breeder, whether he be a capable horse judge or not is given double protection when I e uses a club horse. The Live Stock Branch has steadily and persistently eliminated the stallions that were not up to a high standard. In fact, a few years ago, as high as twenty per cent of the horses hired by clubs were rejected after inspection. During the last couple of years, however, not over three per cent have been refused on account of being unsound, or otherwise not up to the standard required. In this way, club members are being educated, as naturally when a stallion is thrown out by inspection, it leads the club members to inquire the cause.

By steadily raising the standard and by eliminating all the unsound horses as well as undersized stallions that while sound possess such bad conformation that they should not be used for service, good results are slowly but nevertheless surely being produced. Stallion owners to-day do not hesitate to say that only the good ones are wanted. Accordingly, importers when buying have ever before them the fact that in order to sell they must import only the good ones.

### BREEDING STATIONS

The first Breeding Station was started in 1921 with the idea of seeing what might be done in the production of saddlers and hunters, delivery, and remount horses. Some investigation has shown that there was a demand for horses of this type. This demand has steadily grown and to-day it is impossible to supply the number wanted, owing to the shortage of this type of horse.

At the present time, four Stations are in operation: one at Reddick Lake, Que.; a second at Chaffey's Locks, Ont.; a third at Millarville, Alberta, and a fourth at Ailsa Craig. Ont. At each of these Stations, three approved Thoroughbred stallions stood for service last year. In each case the stallions were well patronized; two of the stallions served in the neighbourhood of one hundred mares each, while the lowest number served by any one of the twelve horses was sixty.

The steady demand for saddlers and hunters, both from our Canadian cities and from the United States has done much to revive the interest in this class of horse and to make it profitable as well. The stallions used at the various stations are good specimens of the Thoroughbred and suitable for producing high class saddlers and hunter and other useful horses of that type. As an intance of the effect of Thoroughbred blood in grading up with the ordinary mares of the country, the following may be cited: One of the stallions at Chaffey's Locks, that had been imported from Britain the year before, was bred to sixty mares and left thirty-five colts. The officer who inspected them reported that they were the most uniform lot that it had ever been his pleasure to look over. They showed very strongly the characteristics of the sire and looked as if they had at least two crosses of Thoroughbred blood in their veins. The similarity of type between colts sired by the various horses and also the marked characteristics of the Thoroughbred are readily noticeable and has been frequently remarked upon in the various districts, where these stations are located.

Last year, colt shows in connection with the stations were held at Reddick Lake. Chaffey's Locks and Millarville. In each case there was a splendid exhibit brought out which aroused the keenest competition amongst the exhibitors. In each case the countryside attended the show. In one place the

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attendance was over 2,000 although it was held miles from even a village. The holding of these shows is doing two things: on the one hand, it is educating breeders in the feeding, care and management of their colts, as well as making them judges of the type of horse they are raising; on the other hand, it is advertising the district as a breeding centre and drawing outside buyers who are ready to pick up good prospects at fair prices. In one district at least all saleable animals have been picked up and many more could have been sold if they had been available.

### SILVER BLACK FOXES

The Silver Black Fox industry of Canada had, all things considered, a very successful year. It is true, that owning to the exceedingly heavy snow fall in the Maritime Provinces, the conditions for mating and the raising of foxes, was anything but favourable; nevertheless, the final results showed a fair pup crop, and an improved market. From Prince Edward Island alone, approximately 4,000 live foxes were shipped, of which over 3,400 were exported. The pelt market, although somewhat slow in the early part of the fur season, picked up wonderfully around the beginning of the new year, and later fur sales showed an improvement of fifty per cent in price for the better class of pelts. This revival of the pelt in lustry has also had a beneficial influence on the live fox trade and present conditions point to even better things for the coming year.

During the inspection season, which began about the middle of S ptember and ended the middle of January, in the neighbourhood of 10,000 foxes were inspected, tattoed in the ears for identification and duly registered in the office of the Canadian National Live Stock Records. This brings the number of registered foxes, to date, to over 20,000, and preparations are being made for the inspection of even a larger number during the coming year. The inspection of foxes and their registration by the Canadian National Records, is having a very beneficial effect. The fact that beginners, by buying recorded foxes, are assured of getting animals of fair quality, and that have been bred true to type for a number of generations, has done much to stabilize the industry and put it upon

a sound financial basis.

During the year inquiries have been received from many sections of Canada and various parts of the United States asking as to the future of the silver fox industry. In reply it has been pointed out that there is not only a sorally but increasing demand for furs, but on the other hand the supply from the wilds, particularly of the higher priced furs, is diminishing, hence as the years go by there must needs be a steady growth of the ruising of these fur bearing animals in captivity. The silver fox pelt has long been known as the "Golden Pelt of the Fur Industry," in that it is the highest priced fur on the market, and as it cannot be successfully imitated, it is bound to continue to hold the premier place, and to be worn by the people who can best afford to pay the high prices which it has always commanded.

### FUR FARMING

The raising of various kinds of fur bearing animals in captivity, although carried on by a few individuals for a number of years is still in more or less of an experimental stage. At the present time there are some thirty mink, seventeen raccoon, twelve skunk and eight muskrat ranches in various parts of Canada. Beaver, marten, fisher and rabbits are also being raised by a few people in different parts of the country. It is too early to predict what will be the final outcome of fur farming, but judging by the large number of inquiries received during the past year, it is evident that it is attracting a very considerable amount of attention at the present time. One thing certain, however, is that furs are steadily growing in popularity, not only for the warmth they supply during the

cold winter months, but also for summer wear. As the number of some of the higher priced animals at least, is evidently decreasing in the wilds, it is reasonable to assume that the raising of them in captivity will be profitable and as time goes on will be engaged in more and more, particularly as the Canadian climate is suitable and there is much land well adapted to fur raising.

### CATTLE DIVISION

### ENCOURAGEMENT OF WINTER FEEDING

During the past two years, the Live Stock Branch has been steadily promoting increased winter feeding of beef cattle and has been working out a programme designed to give greater permanence and stability to this phase

of the cattle industry.

The policy of the branch in this respect is based on the principle that a relatively low initial cost of feeder cattle is an essential factor in making this business a profitable one. For many years, winter feeding of cattle has been carried on more or less extensively in several counties in western Ontario, and the system of farming followed in that part of the province lends itself to this practice. Under existing conditions as regards land values and general overhead expenses, however, feeder cattle cannot be raised at a low cost in the majority of these districts. In the grain growing areas in Western Canada, an immense quantity of feed is available annually, much of which is practically valueless unless fed to cattle. Here again, feeder cattle cannot be raised at a low cost and as is the case in Western Ontario, finishing of cattle on an increased scale can be developed only by providing a steady and adequate supply of well bred feeder cattle which have been produced at a minimum cost.

It is an accepted fact that range areas are the logical breeding ground for the production of feeder cattle under low overhead cost. It is also well known that none of our commercial cattle are better bred than those which come from the range, which for years have consistently used only pure bred bulls. It is essential, therefore, that the remnant of our ranching industry should be safeguarded, extended and moulded so as to make it a permanent and dependable source of supply for high grade young feeder cattle to be finished in grain growing districts in Western Canada and in feeding areas in Ontario. The branch is doing everything possible to impress the importance of this question upon the public mind.

The development of such a policy will naturally involve considerable change in practice on the part of many ranchers. Instead of carrying their steers until three or four years of age and selling them off the grass as overweight and frequently only half-finished beef at a period of the year when the market is usually at its lowest point, it will be necessary for them to feed their calves during the first and possibly their second winters and put them on the market as yearlings or two year olds. Under favourable conditions, an expanding demand for range bred calves may even be developed, thereby

facilitating an annual turnover.

During the past year, this policy has been widely discussed with ranchers in both Alberta and Saskatchewan by officers of the Branch and has received very general acceptance even by old timers in the business. The wester of good material in the present ranching practice is fully realized by ranchmen, and if a profitable outlet for young range steers can be developed, they have expressed themselves as fully prepared to remodel their business in order to take advantage of it.

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The proposal has an additional appeal to ranchers in that the elimination of three and four year old steers from the range will make possible a gradual increase of the stock. This will naturally result in an increase in the annual output as regards numbers from each herd and on the basis of prices received during recent years for grass finished range cattle, should also result in increased annual net profits.

A preliminary step in making this policy effective was taken in 1923 in organizing and supporting feeder shows and sales at Calgary. Moose Jaw and Winnipeg. Approximately 90 per cent of the cattle which were entered in these events were range bred steers. Practically all of these cattle had been dehorned as calves and this fact, combined with their uniformity, breediness and general evidence of quality and thriftiness, made them very attractive to buyers.

#### BULL LOANING POLICY

Under this policy which was inaugurated in 1913 the Live Stock Branch has purchased and loaned over 4,000 bulls to farmers' associations in different parts of the country where pure-bred sires would not otherwise have been available.

The majority of the bulls loaned have given a good account of themselves and have not only effected a marked improvement in the quality of the cattle in the districts in which they have stood but have also impressed many farmers with the value of improved blood to the extent of inducing them to purchase pure-bred sires for their own use.

In purchasing bulls the aim has been to encourage the breeders who are producing worth while commercial bulls and for this reason the majority of the bulls secured in recent years have been bought at large consignment sales where support could be given to a maximum degree and in a public way to the better class of bulls offered.

The bulls owned by the branch are retained in service as long as they continue to give satisfaction. Discarded bulls are sold for beef and the proceeds from the sale of such bulls has returned a large percentage of the amount originally invested in them.

#### SIRE PURCHASE POLICY

In the spring of 1921 the branch inaugurated the above policy with a view to encouraging a more extensive use of properly selected sires and of providing an agency through which farmers could secure such sires with the least possible expense and difficulty.

Under the terms of this policy the branch is prepared to fill orders for bulls, boars and rams under certain conditions. An applicant is required to deposit a percentage of the purchase price with his order. The sire when secured is shipped to him on approval. If no complaint regarding the animal is made within three days after delivery the balance of the purchase price becomes due.

A considerable number of bulls have been purchased under the terms of this policy for farmers who are not in touch with breeders and who are so situated that they could not start out to purchase for themselves without running up travelling expense bills out of proportion to the amount of the investment involved. The general terms of the policy have also been used to good advantage in handling bulls through exchange stables in Ontario and in purchasing bulls for the live stock improvement trains which operated in Manitoba in 1922 and 1923 and in Ontario in 1923. In the latter cases the bulls were not purchased on order but were bought outright and exposed for sale at the original cost price plus freight and maintenance charges. Any bulls which

were not resold were utilized in connection with the Loaning Policy. In the past three years upwards of 350 bulls have been sold to farmers under the terms of this policy.

### SCRUB BULL CAMPAIGN IN ONTARIO

For three seasons the branch has co-operated with the Ontario Department of Agriculture and the Ontario Live Stock Improvement Committee in cradicating the scrub bull from a number of selected counties throughout the province. An officer of the branch has devoted practically all his time to this work and has assisted agricultural representatives in several counties in the organization

and carrying on of their campaigns.

In the spring of 1923 the Live Stock Improvement Committee arranged with the Railway Companies for the running of a better live stock train throughout the province. This train commenced its itinerary on March 1 and in the course of the next two months covered the greater part of the province. A number of carefully selected bulls were offered for sale from this train and in all twenty-seven head were disposed of. These bulls were purchased in advance by the branch and any that were left on hand at the end of the trip were used in connection with the Bull Loaning Policy.

A grant of \$2,500 was again made to the Improvement Committee for advertising purposes which amount was supplemented by an equivalent amount

by the provincial department.

#### CAR LOT POLICY

Under this policy the Live Stock Branch pays reasonable travelling expenses of farmers residing in Canada who purchase stock at central stockyards to be returned to country points. In Eastern Canada the assistance rendered is confined to purchases of female breeding stock, cattle, sheep or hogs. In Western Canada the policy covers stocker and feeder cattle in addition to breeding stock. Purchasers have to fulfil certain requirements of the department in connection with their shipments and to give satisfactory assurance that none of the stock is being purchased for speculative purposes.

The cost to the department of all cattle shipped under the terms of this policy during the period of three years averaged 59 cents per head. The average cost of all sheep shipped during the same period was slightly over 18 cents per

head.

This policy has proven very valuable as an educational agency in that its terms have encouraged farmers from different parts of the country to visit stock-yards and to become acquainted with methods of doing business at these points and has unquestionably played a very important part in encouraging the return of unfinished cattle and sheep to country points for further feeding and also in the return of young female breeding stock, particularly from yards in Western Canada.

### CAR LOT SHIPMENTS TO DECEMBER 31, 1923

Year	×1.11.1	Heifers	Sheep
1916 (3 months). 1917. 1918. 1919. 1920. 1921. 1922.	6, 258 11, 334 20, 703 22, 490 14, 009 8, 550 5, 681 9, 970	3, 113 10, 411 18, 745 17, 550 7, 957 7, 659 4, 897 6, 538	1,407 1,800 7,978 9,408 6,317 9,968 3,121 6,602
Total	98,994	76,870	46,601

### FREE FREIGHT POLICY

In co-operation with the Railway Companies of Canada the Live Stock Branch inaugurated the Free Freight Policy in the fall of 1917, the aim being to prevent as far as possible the slaughter or exportation of useful heifers, young ewes and young sows offered for sale on the open market at central stockyards. Under this policy the Live Stock Branch pays 75 per cent of the freight charges on such shipments, the remaining 25 per cent being rebated by the railway companies.

During the time the policy has been in operation shipments under its terms from the different yards up to December 31, 1923, number as follows:—

Name of Yard	Heifers	Ewes	Sows
Edmonton. Calcary Winnipez Prince Albert. Mod se Jaw. Toronto Montreal.	27,356 38,401 27,822 185 558 2,850 193	10.295 56.484 11.644 160 1,030 19,484 452	156 207 459 40
Total	97,365	99,549	\$73

Shipments for the twelve months ending December 31, 1923, were: 8,666 heifers, 16,127 ewes, and 200 sows.

### BOYS' BREEDING CLUB POLICY

The policy has been in operation for only two seasons but the constructive work already accomplished under its terms has been the subject of much favourable comment, particularly in Quebec and the Maritime Provinces. It has stimulated an interest on the part of farm boys in breeding, feeding and showing good cattle. The competitive feature introduced has encouraged the proper development of the calves and the keeping of exact records of the cost of production of the original helfers supplied. Incidentally the boys have been given a great deal of training in live stock judging and have learned the importance of maintaining the proper balance between individuality and production capacity in appraising breading stock. The clubs already established are gradually developing into small breeding centres and are the means of promoting the principle of community breeding.

### GET OF BULL COMPETITIONS

Under this policy which was inaugurated in the spring of 1923 the branch has assisted a limited number of agricultural societies in financing special classes at their exhibitions based on a unit of free yearling progeny of one pure-bred bull. The branch has paid 50 per cent of the prize money awarded in the competitions, the remainder of the money being raised by the society. The number of competitions assisted during the past year was definitely limited in advance and it was also specified that the grant from the Branch to any competition would in no case extend \$100. The object of these competitions is to advertise good sires in the district and to encourage the proper development of their progeny. It has not been required, therefore, that all the animals entered under one group should belong to one owner. The policy is being used to good effect in encouraging members of associations to which bulls have been loaned by the Branch to give more care to their young stock and to bring them out as a demonstration as to what improved blood means to a district.

#### RECORD OF PERFORMANCE

Although some breeders were of the opinion that the regulations which became effective April 1, 1923, would very considerably reduce the number of places where testing was being carried on, the Record of Performance has during the past year continued to increase both in number of farms to be visited and in the number of cows under test per farm. A few breeders have, however, withdrawn their herds owing to their disinclination to comply with the following new regulation which eliminates the possibility of testing only one or two outstanding cows in a herd:—

"Every owner making application for entry of a cow must agree to enter in the test all normal, untested, milking, pure bred cows in his herd which freshen during the period that such cow is under test. The acceptance of an application for the entry of a cow will not bind the Department to continue the supervision of the test in the event of a change of ownership unless the new owner complies with the above requirement. (In the case of Shorthorn and Red Polled breeds 'milking' in the above clause will be interpreted as meaning 'hand or machine milked'.)"

At the present time there are upwards of seventy more farms being visited by our inspectors than at the same date last year, an increase of ten per cent. During the past eight months the number of cows under test has increased thirteen per cent.

Following is a brief summary of the year's work:—

#### NUMBER OF COWS ENTERED FOR THE TEST

Ayrshire	1,281
Brown Swiss	
French Canadian	
Guernsey	
Holstein-Friesian	
Jersey	
Red Poll.	38
Shorthorn	405
Total	4.735

### NUMBER OF RECORD OF PERFORMANCE CERTIFICATES ISSUED

	Cows	Bulls
Ayrshire	. 413	18
Brown Swiss	. 4	1
Guerrary	. 47	1
Holstein-Friesian		35
Red Poll	. 423 16	19
Shorthorn	201	8
Totals	4 200	0.0
	201	8

# TOTAL NUMBER OF CERTIFICATES ISSUED SINCE THE COMMENCEMENT OF THE RECORD OF PERFORMANCE

	Cows	Bulls
Ayrshire	2,965	126
Brown Swiss	4	
French Canadian	170	5
Centern sey	191	7
Holstein-Friesian	3,863	179
Jersey	1,731	1, 1
Red Pell	28	1
Shorthorn	860	22
Totals	9,812	404

### POULTRY DIVISION

Notwithstanding the somewhat lower level of prices for poultry products in 1923 as compared with 1922, it is noteworthy the frequent expression that is heard on the part of the farming public in many parts of the country that the poultry is one of the most profitable lines of activity which they have on the farm. This condition is most evident in the increasing number of requests received for information in r ference to poultry, the number of people who are contemplating specializing in poultry-keeping as a business, and the general desire for most up-to-date information apparent at all points where poultry meetings are held.

Possibly one of the most significant things that has occurred in a poultry way in Canada was the holding in Ottawa in August last of the annual convention of the American Association of Poultry Instructors and Investigators. Not only was there a wide representation from the faculties of the different United States Agricultural Colleges and Experiment Stations, but also several of the most prominent men in poultry work in Great Britain, among them being the British Poultry Commissioner, Mr. Francis, and the President of the International Association of Instructors and Investigators in Poultry Husbandry, Mr. Edward Brown, F.L.S. While no attempt was made to enlarge unduly upon Canadian policies for the advancement of the poultry industry, yet it was very evident that not only representatives from the United States but more particularly from Great Britain were very much impressed with the nature and scope of the policies evolved by Canada, particular mention being made of the standardization of eggs, and the Record of Performance for Poultry, two developments in which Canada stands pre-eminent and alone among the nations of the world.

#### ADMINISTRATION AND ENFORCEMENT OF THE EGG REGULATIONS

The feature of principal interest during the year in connection with the egg regulations was the introduction of amendments covering domestic trading, provided for under the revision of the "Live Stock and Live Stocks Products Act" at the last session of the House. These amendments simply gave effect to the principle which has already been in vogue as covering export and interprovincial shipments for a period of five years with provisions whereby the utility of grading would be more apparent to both producer and consumer.

Following the date of becoming effective in July last, the first two months or more were devoted almost entirely to the explanation of these regulations, first in meetings arranged by country shippers in different parts of the country and, later, by detailed inspection work and explanation among retailers in the larger centres.

There is no one among consumers but who desires a prime quality egg. The whole policy underlying these regulations is to devise some way whereby the consumer may have an opportunity to express his preference for quality through the medium of standardized legal grades, the intention with regard to legislation being simply to provide that minimum of legislation necessary to make these grades effective.

From the producers' standpoint, the object has been to introduce a system of trading whereby the benefit of the consumers' preference for quality may find its way back to the producers through the medium of a price differential.

For years Canadian farmers had been losing annually a large sum of money through the marketing of large numbers of bad eggs and eggs of inferior quality. This loss was not only the loss from eggs unfit for food but the condition apparent had a decidedly adverse effect on consumption. The condition of marketing was largely the result of the "flat rate" or "case count system"

of purchasing whereby eggs were bought by number without regard to quality. The "case count system", where practiced, not only proves decidedly unfair to the farmers and other producers who have taken pains to market good, clean, fresh eggs, but in reality in many instances through placing no premium whatever on good eggs actually formed an incentive to the continuance of careless and dilatory methods not only in the gathering and marketing of eggs on the farm but in the holding and general care of eggs by country merchants and other first receivers.

Some producers argue that the "case count system" of purchase is advantageous to themselves in that they receive the same price for eggs sometimes known to be of inferior quality as they do for eggs of good quality, to say nothing of those that are bad and unfit for food. In this, however, they are mistaken, for the wholesale dealers and others who purchase the eggs know very well what the loss of shrinkage is in eggs at certain seasons, and in order to safeguard themselves, simply set the price for all eggs at a safe level to themselves.

No more significant statement with respect to the utility of these regulations has come to the Department's attention than the remark of one egg merchant from western Ontario at the recent convention of wholesale egg merchants held in Montreal. Some criticism of the regulations was being made by certain members of the wholesale trade, this criticism very largely turning on the requirement for a graded return to the producer. The egg merchant in question rose in his place and stated that no matter what the Government or the wholesale trade might do with regard to requirement for a graded return, he would have to continue the system in his district for the simple reason that the producers who supplied him with eggs had come to realize the advantage to themselves of payment on grade; that they themselves are making closer and closer selections from their own eggs, keeping those of questionable quality, small, and dirty, at home, marketing only the best, and that he was satisfied that if he were to stop, the people of his district would take the matter into their own hands, organize egg circles, and carry on on the graded basis.

One object of the broad policy for egg trade improvement, of which the regulations form a part, is increased consumption of eggs. Canada's home market for eggs is her largest market, and while every effort is being made to extend the export outlet for eggs, yet the home market has long been more or less overlooked. While it may be too early as yet to draw any final conclusions from the operation of this policy, particularly since the regulations affecting domestic trading went into effect, the indications are that during the last six months of 1923 egg consumption per capita in Canada reached the highest point yet attained. No doubt the lessened cost to consumers has been a large contributing factor, but cost alone will not suffice to promote the consumption of an article if the quality is not good. There is no doubt that since the regulations became effective egg handlers generally throughout Canada have paid more attention not only to quality but to the despatch and general efficiency with which the eggs have been

handled from producer to consumer.

In addition to domestic trading, the egg regulations also provide for inspection by approval at point of shipment, of export shipments in lots of 25 cases or more; interprovincial shipments in lots of 100 cases or more; and all eggs imported into Canada for domestic consumption. In addition, on request in which inspectors are located, certain number of inspections are made on local shipments, that is, shipments going from one point to another point within the same province. The total number inspections for which certificates were issued in the calendar year 1923 was 1,528 as against 1,063 in 1922. During 1923, 104 inspections were made in which the shipments—were not approved for ship-

ment as against 83 in 1922. 1,230 inspections of eggs imported for domestic consumption covering 218,148 cases were made during 1923. Of the 440 cars, (197,093 cases) of eggs originating in the Prairie Provinces and British Columbia for eastern shipment 24,964 cases equalling 56 cars had their origin and were in-pected in British Columbia; 54.609 cases equalling 121 cars had their origin in Alberta; 46,560 cases equalling 105 cars in Saskatchewan; and 70,960 cases equalling 158 cars in Manitoba.

During the six months ending December 31, 1923, since the regulations covering domestic trading became effective, upwards of 15,000 inspections and visits to retailers have been made. In all, eight prosecutions were undertaken during the calendar year, a favorable judgment being obtained in each case.

### EGG AND POULTRY MARKETS INTELLIGENCE

An increase in the interest on the part of producers and shippers in the markets intelligence distributed has been noted during the past year. Requests for market reports are being received continually. Practically no change has been made during the past year in the system of distributing these reports. The two chief mediums of distribution are the weekly egg and poultry markets report which is distributed to all parts of Canada by mail and the daily reports distributed through the medium of the Canadian press. In addition a daily report is issued by mail to points that can be reached over night. The cost of all this service is extremely small and particularly so when considered from the stand-

point of the benefit derived from the reports by those receiving them.

Many business houses and co-operative concerns rely almost entirely upon this service for special daily and weekly reports. During busy seasons 'collect' messages by wire are sent to many shippers in different parts of Canada. Previous to this year this service was confined chiefly to eggs, but with the growing importance of the West as a producer of live and dressed poultry it has been necessary to extend the service to cover poultry. In this connection it was found necessary during November and December of last year to secure special reports on the poultry markets at Boston, New York and Buffalo in order that the necessary information might be sent to those making requests for it. There is no doubt that the securing of this information made for very much better prices and more intelligent marketing by those shipping poultry particularly from Western Canada.

Cable information received from Great Britain each week has been of considerable service to exporters, and this service is now being augmented by a cable report sent from Ottawa to the British press through Reuters Limited.

#### CO-OPERATIVE MARKETING AND POULTRY PROMOTION

While progress in the development of co-operative marketing of eggs and poultry was comparatively slow during the recent years of high prices, it has remained for the somewhat adverse prices of 1923 really to establish the utility of co-operative marketing, particularly to those producers less favourably situated from the standpoint of markets.

The result is that co-operative marketing of eggs and poultry is being taken up and discussed in a large, constructive way throughout Canada, and the results are already outstanding and evident in a great many provinces.

In British Columbia the membership of the British Columbia Poultrymen's Co-operative Exchange increased from 610 members on December 31, 1922, to 1,032 on December 31, 1923, an increase of 422 members. During the year the quantity handled was 2,159,610 dezen eggs as against 1,250,000 in 1922.

In Alberta as a direct result of the activities of the Egg and Poultry Marketing Service and the field work performed by officers of the Live Stock Branch, the matter of an Egg and Poultry Pool, similar in form to the Wheat Pool, has been very much to the fore since the close of the egg and poultry shipping season, with the result that twelve representative men have been appointed to organize and lay the plans for the operation of an extensive egg and poultry pool on a contract basis for the coming year in Alberta.

In Saskatchewan and Manitoba, while the Saskatchewan Co-operative Creameries have during the past year operated a small pool in eggs, the most active attention has been paid to the co-operative marketing of poultry, more

particularly turkeys.

In Ontario the most outstanding development has been in the instance of the Oxford County Co-operative. For several years a number of individual circles have been operating on an independent basis in Oxford County. Last year, encouraged by federal and provincial officers, several of them decided to amalgamate and opened up a central candling and grading station in Woodstock. One outstanding feature of their success was their winning of premier honours for Colonial eggs at the London Dairy Show in October last.

The success attained by the Oxford County Co-operative has attracted the attention of many other districts in Ontario and was the contributing factor which led to the lengthy discussion of co-operative marketing of eggs in the United Farm Women's Convention held in Toronto in December, the result of which has been the action of the United Farmers' Co-operative Company in Ontario definitely committing themselves to the operation of an egg pool in

1924.

In Quebec the Société Co-opérative Fédérée has continued its egg and poultry operation and has become one of the largest, if not the largest, handlers of live poultry in the city of Montreal, handling not only carlots originating in Quebec, but from the western provinces as well.

In Nova Scotia and New Brunswick co-operative activities develop slowly, although very satisfactory results were obtained from the co-operative marketing of their poultry last tall. New Brunswick obtained possibly the highest

price for poultry shipped, in the Dominion.

In Prince Edward Island the P.E.I. Co-operative Egg and Poultry Association has largely recovered from the reduction in membership subsequent to the failure of Canadian Farm Products and the liabilities which individuals who were members of both associations were obliged to meet, the quantity of eggs handled by the P.E.I. Co-operative during 1923 being well in advance of the three-quarter million mark.

### CARLOT MOVEMENT OF LIVE POULTRY

During 1923 the earlot movement of live poultry was greatly facilitated by the equipment by the Canadian railways of a number of live poultry cars. Heretofore it had been necessary to bring in special live poultry transit cars from the United States for practically every shipment that was made. The availability of Canadian-owned equipment has done much to stimulate this trade, the cars being built at the representations of officers of the Live Stock Branch.

The development of live poultry shipments has been most marked in the province of Alberta, where not only co-operative enterprise but also private enterprise has taken up the movement of poultry by freight. Previously, practically all live poultry was moved by express, but with lower prices and increasing rates, together with the shrinkage in transit, shippers were literally forced to adopt some other method of transportation.

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The peculiar advantage of carlot movement by freight, to producers, is that payment is made at point of shipment and the grading is done at the car door, in the presence of shipper, whereas by express the payment was nearly all on a delivered basis and the express and shrinkage were deducted by the receiver.

#### RECORD OF PERFORMANCE FOR POULTRY

This policy has to do with the inspection of trap-nested flocks of pure-bred poultry on breeders' own plants and the subsequent certification of the production recorded. The policy has been in effect since the fall of 1919. The record year commences in the fall, entries being received from August until December.

The most striking feature during the past year was the increase in the number of breeders entered. 175 entries being received for the record year

1922-23 as compared with 122 the previous year.

One hundred and fifty eggs is the number of eggs required for a bird to qualify for Record of Performance certificate; 225 eggs for an Advanced certificate; providing each individual bird has laid during an inspection an

egg weighing 2 ounces or over.

At the annual convention of the American Association of Instructors and Investigators of Poultry Husbandry held in Ottawa in August, 1923, the Canadian policy of Record of Performance for Poultry was most strongly endorsed. Several of the foremost poultry authorities in the United States and England were present and during the convention spent considerable time in thoroughly going into all details of the policy. These men gave it as their opinion that the policy being carried out was one of the most potential factors that had come to their attention in the way of national returns from the poultry industry and particularly in establishing known sources of high producing strains of poultry.

Probably the development of greatest importance during the year is the extension of the Record of Performance policy to the approval and banding of Record of Performance cockerels, the progeny of qualified females. This is a matter which a number of the Record of Performance Associations have been urging for some time, as it is felt that once these ibrds have passed a rigid inspection and been approved for vigour, type, and freedom from standard disqualifications it will do a great deal to stimulate the demand for this class

of stock.

### EXHIBITS AND PUBLICITY

Egg and poultry exhibits have been staged during the past year at the following large exhibitions and poultry shows:—

Alberta.- Camrose, Calgary, Red Deer, Lethbridge, Edmonton Exhibition, Edmonton Winter Fair.

British Columbia.—Duncan, Chilliwack, Vancouver, Victoria, New West-minster.

Saskatchewan.--Regina, Saskatoon, Prince Albert.

Manitoba.—Brandon, Neepawa, Dauphin, Russell, Carmen, Portage la Prairie, Winnipeg, (Eaton's Store.)

Quebec.—Valleyfield, Three Rivers, Sherbrooke, Quebec.

New Brunswick.—St. John, Woodstock, Fredericton.

Prince Edward Island.—Charlottetown.

Nova Scotia.—Pictou, Antigonish, Sydney, Truro, Kentville, Amherst.

Ontario.—Essex, Windsor, Kitchener, Petrolia, Chatham, London Exhibition and Poultry Show, Galt, Dundas, Toronto Exhibition and Royal Fair, Simcoe, Guelph, Peterboro, Ottawa Exhibition and Winter Fair, Renfrew, Picton Exhibition and Poultry Show, New Hamburg.

The standardization and co-operative marketing of eggs and poultry and economic production through flock improvement (Recotrd of Performance) are the phases of work that have been featured during the past year. Applications for literature and requests for exhibits and demonstrations show this means of placing the general public in touch with the work of the division continues very popular. Since the egg regulations affecting trading in domestic channels came into force, the interest of consumers in a graded article has grown very rapidly and the demand for candling appliances has been larger than ever.

Candling demonstrations have been given at many points, many hundreds of people taking advantage of these and showing their interest in this phase

of the work.

Live birds were again used in connection with the exhibits at the larger centres for the purpose of demonstrating good and poor producing specimens. Motion pictures have also been a feature at many of the exhibitions during the past year, and it is anticipated that this line of work will become a very important publicity factor.

Particular and special phases of the poultry work are made the subject of press notices. These constitute a very valuable and necessary link between

the department and those interested in the poultry industry.

### MOTION PICTURES

Motion pictures have been used by the Live Stock Branch during the past three years. Projection machines have been distributed to officers of the branch in charge of certain districts or provinces. The distribution of projectors and films is done entirely from Ottawa; the arranging of meetings at which the pictures are to be shown is left in the hands of the district officers.

Some strictly technical films have been made such as "Demonstrating the Judging of Hens for Production," "The Co-operative Marketing of Eggs and Poultry," and "Eggs and Health." Scenarios are prepared by officers of the branch, who also superintend the locating of suitable settings for the pictures,

the necessary properties, etc.

The programme of the meetings at which these pictures are shown is usually arranged to provide some variety. A short address on the subject of the technical films, and one or two scenic films. The latter are also secured from the Department of Trade and Commerce, being part of the "Seeing Canada" series that is now receiving world-wide distribution.

The motion picture as a means of actually depicting agriculture in all its varied phases is increasing in popularity. Officers of the Live Stock Branch report good results from the use of the pictures and the pictures are in increas-

ing demand.

### SHEEP AND SWINE DIVISION

### INTRODUCTION

The opening of the wool marketing season showed that wools were being brought at a substantial advance in prices over the year previous, and the fact that the lamb prices remained steady throughout the season created an increased

demand for breeding ewes. At all the stock yards throughout the Dominion, any ewes with good mouths were readily picked up for breeding purposes and a continued demand indicates that there is a considerable shortage of breeding ewes, particularly in the western provinces. There was also a keen demand for feeder lambs, both East and West. Range lambs were picked up readily, as were reder lambs of domestic breeding. The price of breeding ewes advanced considerably over values of the past two years. A large percentage of ewe lambs were retained this fall to replace older ewes and, in many cases, for the establishment of new flocks. Sheep have been a very profitable side line on all farms and, as a result, farmers are using pure bred rams more extensively, following which there is a steady improvement in the quality of lambs marketed.

The inception of swine grading has given greater confidence and considerable stimulus to the swine industry. During the early part of the year, the price of hogs remained steady in comparison with the price of feeds, and farmers were able to make reasonable profits from raising hogs. These prices, however, were higher than export values of bacon justified. During the early summer months trade influences were able to bring about a reduction in the price of live hogs. This reduction in hog prices established a basis of values comparable to export values of bacon during the summer mentles. Farmers naturally did not take kindly to the lowering of prices and for a time there was a tendency to hold hogs for a better market. This naturally resulted in some increase in the marketings of heavy hogs and later on, owing to lack of confidence in market values, increased the percentage of light unfinished Logs. The new level of prices has reduced the farmers' margin of profit to the point where it is necessary to exercise the best of judgment in breeding, feeding and management, if he is to make a reasonable profit. Prices for live hogs were fairly well maintained throughout the fall months. The bacon market continued to drop steadily until it reached the ninety shilling point and, while there were minor fluctuations during the winter months, the bacon market became generally stabilized at lower values and the price of logs reacted accordingly. Despite the fact that losses in spring litters were high, especially in early litters, there have been considerably more swine marketed in 1923 than in 1922. There has been a steady increase during the year in the percentage of select bacon hogs, also a continued demand for improved breeding stock. The lowering of market prices will, undoubtedly, check the expansion of the industry considerably. However, with an abundance of oats, barley, and low grade wheat in the country which can still be marketed to advantage by feeding hogs, most farmers are accepting the situation as inevitable and are endeavouring to increase their prefits by paying stricter attention to the breeding of hogs of the select bacon grade.

### PURE-BRED RAM PREMIUM POLICY

Applications under this policy have shown a slight increase during the year. This is due largely to ram club organization work in numerous sheep districts which have not previously used pure bred rams. The market demand for better quality lambs and the increase in the price of wool has helped to revive interest in the breeding of better sheep. Sheep raisers who have adhered to the regulations of the policy with regard to docking and eastrating, were handsomely rewarded this fall in that they escaped the cut on buck lambs which was imposed at the stockyards on lambs marketed after August 27, 1923. The operation of this policy very materially increased the sale and demand for pure bred rams this fall and the fact that these were procurable at prices in keeping with wool and lamb values has enabled grade flock owners to improve their flocks with a

minimum cost to themselves, in fact in many cases, especially where lambs had been marketed through the sheep fairs and lamb sales, the added premium has in most cases more than offset the initial cost of the ram.

### PURE-BRED RAM CLUBS

In communities where it is possible to secure a club membership of twentyfive or more farmers who desire to purchase a pure-bred ram this Branch permits a purchasing delegate to be chosen whose travelling expenses will be paid during the time required to purchase the rams. The purchasing delegate is accompanied by one of the Live Stock Branch Promoters who acts in an advisory capacity in making the selection. The delegate is responsible entirely for the actual financial settlement of all purchases made and the distribution of the rams to their owners. The object of this policy is primarily to develop the principle of community breeding. One breed only can be purchased by a club. Up to the present Quebec is the only province to take advantage of this policy and during the last year 829 pure-bred rams were purchased under this arrangement. A number of the other provinces have in part applied this policy and developments are taking place which will permit of the policy becoming effective in a number of the other provinces in future. This policy has been a means of bringing about a marked improvement in the quality of commercial lambs in the province of Quebec. Lambs now arriving on the Montreal market compare very favourably in quality with lambs offered for sale on other markets of the Dominion.

#### PURE-BRED RAM GRADING

The policy of grading pure-bred rams was continued during 1923 in the provinces of Nova Scotia, New Brunswick, Quebec, Saskatchewan, Manitoba, and Alberta. Under this policy applications by pure-bred breeders are made to the provincial departments and an official grader is appointed by this branch to visit the flocks and grade the pure-bred rams which the breeders have for sale. The outstanding rams are designated a "XXXX" grade. Rams of this grade must be outstanding individuals of the breed which they represent. The second grade is known as "XX" rams. Rams of this category are those considered suitable from a commercial point of view to head grade flocks. The third grade known as "X" rams are those considered to be inadvisable to breed from. These rams are recommended to be slaughtered. Rams are designated according to grade by means of tattoo marks in the ear. A record is kept of the number of pure-bred rams graded for each farmer, their grades, and the prices which are being asked for them. In some provinces a pamphlet is issued by the provincial authorities containing this information in detail. The distribution of this information has meant more and better sales for the small individual breeder than was heretofore the case, in fact reports received indicate that there are practically no graded rams available for purchase in any of the provinces. With the possible exception of the Ram Premium Policy this policy has been one of the most appreciated of any ever undertaken by this branch in connection with sheep.

#### SHEEP FAIRS AND LAMB SALES

The Sheep Fair and Market Lamb Sales Policy of the Dominion Live Stock Branch, Sheep Division, culminates commercially, as well as educatively, the various improvement activities related to sheep extension work. For many years past farmers have been encouraged to dock and castrate their lambs, buy pure-bred rams, dip their flocks, and in other ways practise modern methods of

sheep management. In the raising of sheep, as well as in other things pertaining to agriculture, the farmer requires a definite and practical demonstration to convince him that for such efforts he receives monetary returns not only for the cash outlay in the pure-bred rams used, but also for the labour involved.

In many districts where sheep raising is general it is found possible through the operation of the Ram Premium Policy to induce practically all sheep raisers to buy pure-bred rams, and, in the organization of these ram clubs, the importance of deciding on one breed only for each respective community was pointed out, with the result that little difficulty was experienced in establishing the use of one breed of rams. In such districts where a definite breed improvement policy has been adopted and is operative, the Sheep Fair and Lamb Sale provides a means whereby sheep raisers in the district can exhibit their lambs for comparison with those of their neighbour. Lambs of uniform bree ling that have been docked and castrated permit of their being graded advantageously for sale purposes, thus enabling farmers to get the premium which improved and well-

finished stock always brings on the market.

During the past year fifty-three fairs were held in the Dominion, three in Manitoba, three in Ontario, forty-five in Quebec, one in New Brunswick, and one in Nova Scotia. At each of these fairs, exhibits consisted of pens of five finished market lambs, pens of ten finished market lambs, and a class for a pure-bred ram and three ewe lambs of his progeny. The various pens of market lambs were judged from a market standpoint and, wherever possible, a packer's buyer was secured to assist with the judging. The minimum entry which justified a fair was three hundred head. Many of the fairs greatly exceeded this number. Victoriaville, Que., had the largest exhibit, with 650 head. The second largest exhibit was at the Botsford Fair, New Brunswick, where 615 head were exhibited, and the third largest fair was at Arborg, Manitoba, where 530 head were shown. At all these fairs a total of 15,823 lambs were on exhibition.

At each fair the judging was followed with keen interest by the exhibitors and other farmers who attended. The judges took pains to explain the present day requirements of market lambs and in making the awards pointed out to the exhibitors the good points of the winning pens as well as the defects in the pens which were being placed towards the bottom of the classes. After the various pens had been placed by the judges, the lambs were offered for sale. In the organizing of these fairs, a special sales committee was appointed for each fair. Previous to the date of the fair, these sales committees were kept fully advised as to the market values for lambs on all competitive markets. At most fairs, the cales committee offered the lambs locally by public auction. A good deal of publicity was invariably given to the lamb selling feature of the fair with the result that local drovers and packers' buyers participated in the bidding. The sales committee decided on a minimum sales price and, if the highest bid represented full market value, the lambs were soll, otherwise they were loaded on cars and shipped to the best available market. When auctioning the lambs they were offered with a view to suiting the buyers. The leading prize winning pens comprised the first lots and succeeding lots were made up on the basis of comparative merit. Lambs which were brought in for sale although not exhibited were graded and sold as No. 1, No. 2, or Culls. The highest price obtained for lambs at the sales was \$12.50 per ewt. The general net price for choice lambs ranged from \$9.50 to \$10.85 per cwt.

A very important feature of these fairs this year was the number of ewe lambs purchased by farmers for the establishment of new flocks, as well as the ewe lambs of improved breeding retained by sheep raisers to improve their own flock. These sheep fairs are, undoubtedly, reviving interest in sheep raising. They have materially improved the average prices to the farmer and, through added returns, have convinced farmers that it pays to use a pure-bred ram.

They have, furthermore, created a greater knowledge among packers of where the best market lambs are produced and, as the fair provides a medium through which quality lambs can be purchased in quantity with a minimum of expense, the larger lamb buyers are already much interested in this project, which, undoubtedly, combines successful educational and marketing features in a way that works out to the general satisfaction of the producer and the buyer.

Prize money for these fairs is contributed, one-half by the Dominion Live Stock Branch, and one-half by the Provincial Departments of Agriculture. At

many fairs, donations for special prizes were received locally.

### SHEEP FEEDING COMPETITIONS

These competitions which were begun two years ago in the province of Quebec were limited during the past year almost entirely to those sections where sheep improvement was being brought about through the organizing of pure-bred ram clubs. The purpose of these competitions is to encourage the better care of the flock and those other practises which are essential in preparing lambs and wool for market. In connection with this policy the branch co-operates with the Quebee Department of Agriculture in that 50 per cent of the prize monies offered are paid by each department. The maximum prize money for each competition must not exceed \$100. Inspectors in making the awards consider the buildings, equipment, uniformity of the flock, condition of the ewes and rams, feeds and methods of feeding, use of forage crops, weight and quality of wool clip, and weight and quality of lambs marketed. In so far as possible, flock management and flock improvement were discussed with each farmer who entered the competition. Assistance as necessary, was given in the docking and castrating of the lambs and dipping of the lambs and ewes.

Twenty of these competitions were held in the province and as a result of inspections made many flocks have been culled of undersirable ewes, improved feeding racks have been built, proper roughages have been grown, and farmers will market wool of a superior quality and lambs of a more desirable market

type.

### SIRE LOAN POLICY FOR RAMS AND BOARS

Requests for loans of rams under this policy continue to be received. However, in view of the assistance given under the Ram Premium Policy, and in the organization of ram clubs, loans have been restricted to associations formed in newly settled districts, and in districts where returned soldiers have settled. In 1922 there were 118 rams on loan under this policy. These have been reduced during the year to 96. The reduction in the number of rams loaned has made it feasible to give these associations closer supervision. The operation of the policy has also been more definitely confined to special districts and this of itself has tended to reduce supervising costs as well as intensifying the results of the policy where it is operated.

Owing to the rapid expansion of the Boy's and Girls' Swine Club Policy, and the subsequent necessity for supplying these clubs with outstanding breeding sires, the demand for loans of boars to these clubs has increased during the year.

A total of 182 boars are on loan as compared with 110 last year.

### MEETINGS AND SHORT COURSES

Throughout the winter months an extensive programme of meetings and short courses was carried out. The programme of these meetings and short courses included the judging of hogs and sheep alive, followed by a study of the same animal after slaughter. It was possible by this method to give farmers a more definite conception as to why certain points are essential in a lamb or hog

from a commercial point of view. Aside from the main object of these demonstrations farmers are able to gather some good pointers on home butchering. Sides of cured Wiltshire bacon were carried from one course to another for the purpose of illustrating the manner in which bacon is exported and the various grades recognized by the trade. The courses were held not only at country points but at a large number of the packing plants as well. It is felt that these meetings are largely responsible for the fact that farmers are continuing to demand an extension of the sale of hogs by communities on a graded basis.

In addition to the practical features put on during the day, a special programme was arranged for in the evening to which men, women and children were invited. Educational motion pictures dealing with live stock are recognized as one of the most effective methods of illustrating features at live stock marketing. A series of films recently completed, dealing with such subjects as co-operative marketing of wool, swine club work, marketing and processing of hogs and the raising of hogs for profit, have proved of much interest and have been of great value in adding to the educational scope of meetings and short courses held during the year. During 1923 there were 182 meetings on topics related to sheep, 263 meetings on topics related to hogs, 111 other meetings, and 152 short courses. At these meetings and short courses there was a total attendance of 54,092 throughout the Dominion.

### DEMONSTRATIONS

Demonstration work constitutes one of the main features of the Sheep and Swine Division activities. All the policies pertaining to sheep contain, as one of the qualifying regulations, the stipulation that all lambs must be docked and all male progeny, except pure-breds, must be castrated. The effect of this stipulation has been widespread and when coupled with the Sheep Fairs Policy has enabled farmers to capitalize the practice in actual monetary returns. The correctness of the policy of encouraging docking and castrating has been further substantiated by the market cuts which went into effect on some of the stock yards last fall.

Dipping demonstrations have had a definite influence in cradicating ticks. Interest in the dipping of sheep has been developed in many new districts through the demonstrations given by field men with the galvanized tanks used for this purpose. In order to encourage the permanent dipping of sheep in communities, permanent concrete tanks were built in tity-one districts last year. The demand for permanent tanks has been greatest in Ontario but there has also been some demand in the Maritime Provinces, Quebec and Manitoba. The low cost of construction and their adaptability for community use has made these tanks very popular.

In the province of Manitoba, Ontario, Quebec, Nova Scotia, and Prince Edward Island, a considerable number of demonstrations were given at which farmers were shown the proper method of renoving the fleece from a sheep and the manner in which it should be prepared for market. There were 339 demonstrations of this kind given and graders, who graded the wool when it was marketed co-operatively, state that there was a marked improvement in the condition of the wool as compared with former years.

Under this heading we may also include a large number of demonstrations given at shipping points where hogs were graded in accordance with the official grades. As a result of the inception of hog grading a year ago, there has been a keen demand, more particularly in Ontario, for demonstrations of this nature especially on hog shipping days. At such demonstrations an official grader is present to grade the hogs and to explain matters pertaining to hog grading. In the province of Ontario alone 145 of these demonstrations were given during

the year. These demonstrations are particularly valuable as a means of pointing out to farmers the market defects of their hogs and have been a very effective means of establishing the buying of hogs on grade at country points and on this account the demand for these demonstrations is steadily increasing.

Associated with hog grading demonstrations there has been a demand for information on the grading of bacon and it has been found necessary to demonstrate with Wiltshire sides the actual requirements of the British market. Following the instructions received at hog grading and Wiltshire demonstrations farmers have asked for special advice in the selecting of breeding gilts. A very considerable number of brood sows have been selected at the hog grading demonstrations. In other cases farmers have requested the demonstrator to visit their farms in order that advice may be secured on the type of sows being kept for breeding purposes. These demonstrations have resulted in a demand by a number of districts in the provinces of Manitoba, Saskatchewan and Alberta for the shipment of specially selected bacon type sows from the stockyards for general distribution. The application of the Free Freight Policy has made it possible to meet these requests by selecting bacon type sows and shipping them out to country points in lots of twenty-five or more. By this method farmers have been supplied with specially selected sows at actual market values.

A new phase of the work undertaken this year was the use of mobile exhibit trucks which were operated in the provinces of Alberta and Ontario. In Alberta the truck was instrumental in bringing to many farmers the correct idea of the select bacon hog and, as a result of demonstrations held, several hundred bacon type sows were sold in the districts visited and an average of one bacon type boar was sold at each demonstration given. In Ontario the truck was used largely in connection with sheep demonstration work including the dipping of sheep and exchanging and distributing of pure-bred rams. The truck proved to be of extreme value on Manitoulin Island where through its use farmers received first hand information on shearing, wool grading, sheep dipping, and the value of using a pure-bred ram. Both trucks proved to be a very economical method of reaching the farmers in districts where they do not readily come in contact with marketing problems.

#### WOOL GRADING

The policy of grading wool offered for co-operative sale was continued in 1923. In some sections this year a considerable increase in the amount of wool sold co-operatively was noted. However, in the total amount graded there was some reduction as compared with former years. This reduction in actual amount was partly due to a smaller number of large shipments from the western ranches, and also because of a decrease in the size of the average farm flock. There were more shippers in 1923 than in some other years when more wool was handled.

The prices for wool were very good in the earlier part of the season and wool sold previous to the end of July, particularly the Ontario, Quebec, and Maritime Province clips, realized very good prices. The most unfortunate thing about the past season's co-operative sales was that western wool, quoted at very high figures in the early spring, because of the time taken in collecting and grading, reached the market at a time when wool values were much reduced. During the months of October and November the market recovered considerably and the balance of the wools on hand were cleared at prices in advance of those prevailing during the summer months. It is gratifying to note that, for the first time, a considerable quantity of Canadian wool was successfully sold on the British markets. Over 500,000 pounds were sold to Bradford and London firms,

### SHEEP AND SWINE EXHIBITS

At all the larger provincial fairs in the Dominion, at the winter fairs and at as many of the country fairs as was practical, sheep and swine exhibits were shown.

The sheep and wool exhibits featured profits from sheep, the quality of Canadian wools adaptable to the manufacture of Canadian textiles, and the market requirements in lambs. The section devoted to featuring Canadian textiles made from Canadian wools attracted a great deal of interest and should do much to do away with the popular fallacy that one must buy imported cloth

in order to secure wearing qualities.

The bacon hog and its relation to Canada's swine industry was made a special feature of the swine exhibit section. Prolificacy of bacon sows as a factor in reducing production costs, the benefits of hog grading, and the sale of hogs on a quality basis, were the three main ideas which were given special emphasis and the illustrations used in this connection did much to acquaint the farmer with the principles and importance of hog grading in the devolpment of

a bacon hog policy for the Dominion.

A special exhibit of wool and bacon was put on during the month of February at the T. Eaton Company, Limited store at Winnipeg. This exhibit was arranged in co-operation with the company as a feature of their annual attraction which this year included a seed grain competition. The exhibit of Canadian wools and textiles was quite extensive and set forth the special advantages of the wool of each of the four western provinces for specific purposes. The bacon hog exhibit by means of Wiltshire sides and carcasses from select bacon and thick smooth hogs cut into the various English and domestic cuts demonstrated in quite a convincing manner that the product of the select bacon hog is the most profitable for our domestic as well as our export trade.

### CO-OPERATIVE MARKETING

The co-eparative marketing of sheep and swine has been more or less centralized to sales through sheep fairs and boys' and girls' swine clubs. Through these mediums it is possible to assemble for sale both lambs and hogs in volume at local centres and to demonstrate market values by selling on a graded basis. In the Maritime Province the limited market for both lambs and hogs has necessitated the continuance of co-operative shipping and this was organized so as to effect local sales in sufficient volume to meet consumptive capacity and at a price in keeping with market values. Surplus supplies of hogs were produced in Prince Edward Island and assistance was given in the shipping of these to the Montreal market. Surplus supplies of lambs were offered for sale in such a manner that Boston and Montreal buyers competed and as a result very satisfactory prices prevailed throughout the marketing season.

In Quebec, Ontario, and Western Canada, where pure-bred rams have been introduced and where special organization work had been done in connection with the improvement of sheep it was possible to arrange for the co-operative shipping of special carloads of market lambs. This was most successfully carried out in Grey county, Ontario, where numbers of early lambs were marketed

and realized the top price of 163 cents per pound.

### BOYS' AND GIRLS' SWINE CLUBS

This policy, although only adopted in 1921, has been so favourably received in all the provinces that, during the past year, further organization work was possible and during the year one hundred and fifty-eight clubs were in operation. As a result of the organization of this number of clubs, much new interest has

been created in the raising of bacon hogs, large numbers of improved breeding stock have been introduced into club districts, members have received instruction on feeding and finishing methods and the foundations have been laid for improve-

ment of the local hog marketing system.

Quite a number of the clubs made arrangements whereby some members purchased specially selected breeding gilts in the fall, these being bred to a boar of outstanding merit. This provided a source of supply of young pigs for the remaining club members in the spring. This plan of organization has the advantage that it ensures a supply of uniformly bred pigs of good quality. In other clubs, orders were given by the various members and pigs of suitable merit were selected to meet the requirements of club members. In some cases a supply could be obtained locally, while in other cases, the supply had to be shipped in from outside districts.

Complete arrangements for the supply of pigs were made early in June, after which the pigs were tagged and members assumed responsibility for feeding. Several circular letters dealing with feeding and management problems were issued during the summer. In addition, by personal contact work, the members were advised as to the progress they were making, consulted about the feeds used and the balancing of rations for the pigs at different ages. Matters such as housing accommodation, exercise, and use of green feeds were also dealt with. In addition, club members were given instruction in the judging

of bacon hogs.

The local exhibits of club hogs proved to be a valuable educational feature of the whole policy, particularly where fifteen to twenty or more pairs of bacon hogs were exhibited. The local swine club fair provided an opportunity for the club members to study the quality of their exhibits in comparison with their competitors. The pigs shown at these fairs were generally of such high quality that parents and neighbours were definitely influenced in favour of the bacon hog and, as a result, members, who had the outstanding exhibits, found no difficulty in booking orders for pigs to be farrowed the following spring. The Federal Department of Agriculture pays one-third of the local prize money and the other two-thirds are paid by the Provincial Department and by the community.

The earlot entries in the earlot Competitions were much improved over those of a year ago, in fact, during the fall months, the hog grading records show that there was a decided increase in the percentage of select bacon hogs during the period when swine elub hogs were going to market. The breeding, type and finish of the earlot entries reflected the value of care in selecting breeding stock and in paying close attention to all the details of feeding practice. Information gathered from some of the districts in which the best carlots were finished indicate that these members made the greatest use possible of skim milk and green feeds. On this account their production costs were particularly low, thus

leaving them a good margin of profit over cost of production.

Teams of two boys from each club competed at the central marketing points in a bacon hog judging competition. Over four hundred club members visited their respective marketing centres where they saw the carlots entered in the carlot competitions, participated in the judging competitions, observed the methods of buying and selling practiced at the stockyards, visited packing plants, and, in a general way, became acquainted with the procedure common to the marketing of livestock. The knowledge thus gained will enable them to develop breed improvement policies with a clearer understanding of market requirements.

The Federal Department of Agriculture pays all the prize money for the Carlot Competitions and for the Interclub Judging Competitions. The agricultural field men of the various provinces undertake the responsibility of

organizing the swine clubs under this policy and a great deal of the success attained is due to the splendid efforts of these field men. The sheep and swine promoters have co-operated with the provincial men in organization work, in securing a suil ble supply of pigs and have participated in the contact work with the club to mbers in association with the provincial field men. Similarly federal promoters have had the assistance and co-operation of the provincial officers in making arrangements for the judging competitions and the marketing of the carlots entered in the carlot competitions.

### HOG GRADING

Hog grading has now been in effect for sixteen months and, while there is practically nothing by way of precedent and no statistics to refer to, yet there is evidence in plenty to indicate that hog grading has done more than

any other policy towards improving the quality of Canadian hogs.

During the year, as a result of the hog grading regulations, packers' buyers and live stock commission men at the various stock yards have become definitely acquainted with the official hog grades. The continued grading of Logs at all marketing centres has also acquainted shipping agents and drovers with the weights and types of hogs designated to the various grades. Farmers also, through contact with buyer or shippers and through the medium of meetings and demonstrations have come to realize more and more what is required in a select bacon hog both from the standpoint of type and finish. This knowledge, on the part of the trade, has permitted of steps being taken to simplify the grading methods at stockyards and packing plants. Similarly the fact that drovers and farmers are now acquainted with the grades of hogs has permitted of the buying and selling of hogs at many country points on a graded basis with general satisfaction to both producer and buyer.

The whole policy of hog grading is therefore steadily gaining in popularity largely because, firstly: it has been found to be a practical method of trading in logs; secondly, it has greatly improved the quality of hogs in the Dominion, and thirdly, has provided a basis of scale which recognizes quality in product. Hog grading statistics show the percentage of scheet bacon hogs to be 14.97 per cent in 1923, but these statistics do not tell the whole story in so far as analyzing the figures pertaining to the marketing of commercial hogs. The infusion of bacon blood has modified the type of the thick smooth logs to a very marked degree. Quite a percentage of these logs are now approaching the select bacon standard and, in consequence thereof, produce a much better careass. The average finished weight of both the select bacon and thick smooth hogs indicates that farmers are paying close attention to the correct market

weights.

One of the main difficulties under which the grading system has laboured has been to find a solution for the problem of getting the premium back to the producer of the select bacon hogs. From the outset, the majority of shipping associations and a percentage of drovers have made returns to farmers on a graded basis. The percentage of drovers who buy on grade is steadily increasing but there is still a big percentage of hogs bought on a flat basis at country points. In many districts, where hogs are sold flat, the percentage of select bacon hogs is so very small that no great loss is sustained. On the other hand, there are many good districts where the quality of the hogs is good and where the drover buys flat and very often sells at the market point on a graded basis. In such districts it is felt that the farmers should take action to protect themselves and organize so as to secure the advantage of selling their hogs on grade. An effort is being made to bring to the attention of farmers

in the poorer hog raising sections the value of the bacon hog type in the production of commercial hogs, and steady progress is being made with these communities, although it will take time to cover all the ground needing attention.

At the last meeting of the Joint Swine Committee recommendations were made to the Minister of Agriculture to have certain changes made in the weight limits of the official grades and, as the recommendations were approved by the minister, they were made effective by Order in Council No. 352. Under this Order in Council a difference of ten pounds is made between hogs weighed off cars and those that are fed and watered. This brings hogs, handled under the two methods of sale, to a common level of relative values.

The following extract from Order in Council No. P.C. 352 includes the

amendments respecting the grading of hogs:-

3. Hogs intended for slaughter in Canada and when sold or accepted for purchase according to grade shall be graded as follows:—

Grade 1.—Select Bacon: Hogs weighing 170 to 220 pounds W.O.C. at stockyards and abattoirs, or hogs weighing 180 to 230 pounds fed and watered at stockyards or at local shipping points and at such other points as may be designated from time to time; of a type and finish indicating suitability for the production of choice bacon. Jowl and shoulder light and smooth; back from neck to tail evenly fleshed; side long, medium depth, dropping reasonably straight from back; ham full, good general finish; no excess fat.

Grade 2.—Thick Smooth; Hogs weighing 100 to 210 pounds W.O.C. at stockyards and abattoirs or hogs weighing 170 to 220 pounds fed and watered at stockyards or at local shipping points and at such other points as may be designated from time to time not conforming to Select Bacon standard but of smooth conformation and finish.

Grade 3.—Shop Hogs: Hogs weighing 120 to 160 pounds W.O.C. at stockyards and abattoirs or hogs weighing 130 to 170 pounds fed and watered at stockyards or at local shipping points and at such other points as may be designated from time to time, of smooth conformation and finish.

Grade 4.—Heavies: Hogs weighing over the maximum weights for selects and thick smooths and up to 260 pounds W.O.C. at stockyards and abattoirs or hogs weighing up to 270 pounds fed and watered at stockyards or at local shipping points and at such other points as may be designated from time to time. Hogs of Select Bacon or Thick Smooth conformation and finish.

Grade 5.—Extra Heavies: Hogs weighing over 260 pounds W.O.C. at stockyards and abattoirs or hogs weighing over 270 pounds fed and watered at stockyards or at local shipping points and at such other points as may be designated from time to time. Of Smooth conformation and finish.

Grade 6.—Feeders: All unfinished hogs of any weight. Any type of smooth conformation but unfinished.

Grade 7.—Roughs: Hogs of rough conformation. Any weight.

Grade 8.—Sows: All females that have raised one or more litters.

Sub-Grade (a).—Those of smooth finish and trim underline weighing up to 350 pounds at stockyards and abattoirs or sows weighing up to 360 pounds at local shipping points and at such other points as may be designated from time to time.

Sub-Grade (b).—All other sows.

Grade 9.—Stags: Boars which have been castrated and are well healed.

It will be noted that the new Order in Council provides for a weight range on select bacon hogs at country points of 180 to 230 pounds. This weight range, allowing for the usual shrinkage in transit to market or for fed and watered hogs when shrunk for slaughter, produces a range of careasses suitable for making Wiltshires of the most desirable weights for the British market. This increase in weights for select bacon hogs gives the producer of this grade an added advantage in marketing because he can now keep his hogs longer during a period when gains are rapid and most economical.

No change has been made in the weights for thick smooth logs except that, as in all other grades, a difference of ten pounds is allowed between off car hogs and fed and watered hogs. It was not considered wise to raise the

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weights of thick smooth hogs because, by so doing, it would be necessary to include heavier and fatter hogs which would deteriorate the quality of the class and lower their commercial value.

It is expected that the new Order in Council will give added stimulus to

the production of bacon hogs in the Dominion.

The following table gives a brief summary of the hog grading statistics for the year 1923:

SUMMARY OF OFFICIAL HOG GRADING BY PROVINCES, YEAR 1923

Condina	Alb	erta	Saskatchewan Manitoba		toba	
Grading	Stock	Packing plants	Stock	Packing plants	Stock	Packing plants
Select bacon. Thick specifical Heavies. Extra heavies. Shop hogs. Lights and feeders. Roughs Sows No. 1. Sows No. 2. Stags. Total.	5,007 116,730 5,238 787 13,905 14,106 485 3,783 1,831 287	4,541 183,408 5,999 530 40,447 3,432 738 5,365 2,440 230	2,307 31,278 3,969 1,209 3,603 1,460 180 1,608 750 147	698 19,480 1,353 346 2,309 732 79 1,072 436 76	15,095 149,307 18,911 5,297 15,631 25,479 702 8,695 4,042 633	4,245 30,763 1,632 412 4,870 1,219 69 1,334 574 93
	Ont	tario	Que	bec	То	tal
Select bacon	100,228 185,559 28,956 1,718 39,348 8,548 103 1,494 5,674 449	178,902 $589,967$ $54,427$ $5,072$ $96,632$ $28,042$ $744$ $3,777$ $12,260$ $1,040$	30,219 \$2,393 9,169 799 65,565 6,609 695 775 5,658 269	29,510 75,404 5,443 1,055 41,759 1,358 118 1,193 3,941 281	152.56 $565.267$ $66.243$ $9.810$ $138.052$ $56.202$ $2.165$ $16.355$ $17.955$ $1,785$	217,896 $899,022$ $68,854$ $7,415$ $186,017$ $34,783$ $1,748$ $12,741$ $19,651$ $1,720$
Total	372,077	970,863	202,151	160,062	1,026,690	1,449,837

### HOG GRADING AS SHOWN BY PERCENTAGES

(Stock Yards and Packing Plants Combined)

Grading	Alberta Per cent of total	Saskat- chewan Per cent of total	Manitoba Per cent of total	Ontario Per cent of total	Quebec Per cent of total	All Provinces Per cent of total
Select bacon. Thick smooth. Heavies. Extra heavies. Shop hogs. Lights and feeders. Roughs Sows No. 1. Sows No. 2. Stags.	2·33	4·10	6.69	20.78	16.49	14.97
	73·33	69·45	62.31	57.75	43.56	59.13
	2·75	7·28	7.11	6.20	4.03	5.45
	0·33	2·13	1.98	0.51	0.52	0.70
	13·28	8·09	7.09	10.13	29.63	13.03
	4·28	3·0	9.24	2.72	2.20	3.67
	0·30	0·35	0.27	0.06	0.22	0.16
	2·24	3·67	3.46	0.39	0.55	1.17
	1·04	1·62	1.60	1.34	2.65	1.52
	0·12	0·31	0.25	0.12	0.15	0.14

Note.—The above tables show the grading of hogs marketed in the various provinces, regardless of the province of origin. For example, marketings in Quebec include a large percentage of Ontario hogs. Figures showing marketings by province and county of origin will be published in report No. 4 "Origin and Quality of Live Stock Marketed in Canada" at a later date.

#### BACON GRADING INVESTIGATIONAL WORK

During the past year an officer of the branch has devoted practically his entire time to familiarizing himself with methods and practices in the various packing plants throughout the Dominion, and in addition to this, ten weeks of his time was spent in England studying the requirements of the bacon market there and the relationship of our product to these requirements. A complete report with recommendations covering this work has been submitted to the minister.

A brief of this report was submitted to the Joint Swine Committee for their consideration and, after due consideration, they passed a resolution recommending that it was not considered feasible at the present time to grade Canadian bacon officially, but were of opinion that further work should be carried on by the Department in co-operation with the packers with a view to securing continued improvement in the development of existing grade standards. The Committee were further of opinion that the unification and improvement of bacon standards will depend largely on the improvement in the quality of Canadian hogs.

Acting in accordance with the recommendations made by the Joint Swine Committee, further investigational work will be carried on. In order to expedite this work and to centralize discussion and thought on a definite objective, each exporting packer has received a copy of the report as presented to the Joint Swine Committee. After this has received their consideration, it is the intention to have a representative of this Branch meet the packers as a body and to discuss the objective of securing official recognition for grades of Canadian bacon.

Further work has already been instituted to analyze the degree of uniformity in our export of Wiltshires, but as yet there is nothing to report.

#### BACON PRODUCTION TEST WORK

Two years ago an effort was made to secure information which would make it possible to grant recognition to breeding stock that has proved their ability in the production of bacon hogs. Last year further information was obtained by scoring the carcasses of a number of experimental logs. The difficulties attached to securing central feeding stations and also a proper means of correlating the carcass scores with other information pertaining to feeding and management has made it impossible to announce a programme in this work which would be satisfactory to conditions in all parts of the Dominion.

At the present time valuable information is being secured on the relative merits of breeding stock by analysis of hog grading and what it shows concerning the hogs from a given district. This is being further developed with a view to showing the percentage of selects from the various boars in the district. This work shows promise and it is hoped that, during the coming year, various provincial organizations may be induced to co-operate in securing this information.

Further to encourage and direct the efforts of pure-bred swine breeders in order to ensure the distribution of the proper type of bacon breeding boars and sows, it is proposed this year to encourage pure-bred breeders to enter two hogs from a litter in a carcass competition. These will be held at five centres in Canada and, coincident with this competition, a short course will be held. At these courses the results of cutting demonstrations and of experimental feeding trials will be placed before the breeders in such a way as to emphasize the proper course for their activities as breeders.

### LIVE STOCK PURCHASED

The organization work connected with the Sheep Fairs and Boys' and Girls' Swine Club policies has created a demand for the participation of our field men in the selection of stock of the desired type. Districts have been encouraged to appoint purchasing agents who have been advised and aided when making selections. The knowledge which our field men have of pure-bred stock available for sale has enabled them to bring many individual buyers and sellers together

in effecting purchases and sales.

Owing to the restrictions placed on the importation of pure-bred stock from Great Britain as a result of foot and mouth disease, our breeders of pure-bred sheep and swine had reached the point where they felt that their flocks and herds were decidedly in need of new blood. It was realized that individual breeders would be decidedly handicapped in securing suitable individuals, and, furthermore, the purchasing and transportation costs would be prohibitive. The breeders requested assistance from the lederal and Provincial Departments of Agriculture in order that importations of both sheep and swine might be made in sufficient numbers to meet the breeders' requirements. A plan of assistance was authorized which provided for the defraying of all purchasing and transportation costs, provided one-half of these costs were met by the various Provincial Departments in the provinces where the breeders participated.

The regulations provided for the appointment of one purchasing delegate from each province or a group of provinces where thirty or more head of stock was ordered. The provinces of Ontario, Quebec, Saskatchewan, New Brunswick, Nova Scotia and British Columbia co-operated in giving assistance to their breeders, and Purchasing Delegates were appointed for Ontario, Quebec and Saskatchwan. Orders from the other provinces were taken care of by the Dominion representative who was also responsible for details of finance, registration, certificates, insurance, transportation and shipping arrangements.

Each breeder in placing an order for an imported animal, in addition to making the initial deposit, specified the breed, age, price and other particulars regarding the type of animal required. The purchasing delegates endeavoured to buy animals of the specified qualities mentioned in the order and within the price range limit. Considerable difficulty was experiented in securing animals of the desired quality and at prices stipulated by Canadian breeders. However, the orders were eventually all filled and, upon delivery, apparently gave general satisfaction to the breeders who placed orders.

### GOAT EXTENSION WORK

The interest which was evidenced in the goat demonstrations held in 1922 seemed to warrant their continuance this year and ac ordingly the work was carried out in the vicinity of Oakville. Humber Bay, Long Branch, Weston, Westmount, Mount Denis, Fairbank and Minico. In these districts truck farming is being carried on and, as the farms are small and intensively farmed, it is not considered economical to keep a cow although there is ample roughage suitable for a goat. These sections have difficulty in getting a suitable milk supply consequently their needs can be most easily met by keeping a family goat.

As a result of contact work brought about through the demonstrations already held, numerous sales have been effected. However, the demand is away beyond the available supply provided by Ontario goat breeders, and the Ontario Milk Goat Breeders' Association is contemplating the importation of a carload or more of milking does from the province of British Columbia. If these does are available it will warrant the department in carrying on further goat demonstrations.

stration work in 1924.

## MARKETS INTELLIGENCE AND STOCKYARDS SERVICE DIVISION

The Markets Intelligence and Stockyards Service has been in operation since 1916.

The policies effective through this division promote the development of live stock marketing in the Dominion along lines designed to stimulate efficiency

in actual purchase and sale.

Under provisions of the Live Stock and Live Stock Products Act, consolidated and revised in 1923, this Division through the Live Stock Commissioner, enforced regulations governing the construction, maintenance and operation of public stockyards in Canada, and the methods employed in public purchase and sale of publicly marketed commercial live stock. The Division also procured and distributed detailed information on supply and demand, maintained a bareau on general live stock and meat trade information, issued up to date, daily, weekly, monthly and annual market reviews. It supplemented the above publicity with statistical information concerning the origin, quality and outlet of every meat animal publicly marketed. Also, associated with the service on the domestic industry and trade, was one on foreign live stock and trade conditions.

The stockyards activities are undertaken by especially qualified officers of the branch, stationed at each of the terminal stockyards. These yards are eight in number, and are located at the following places: Calgary, Alta.; Edmonton, Alta.; Prince Albert, Sask.; Moose Jaw, Sask.; Winnipeg, Man.; Toronto, Ont.; East End, Montreal, Que., and West End, Montreal, Que. The Markets Intelligence Service is provided through the co-operation of the stockyards agents and their assistants with the Markets Intelligence editorial and statistical staff at

headquarters in Ottawa.

Some idea of the extent of supervision and general activity necessary to deal with this commercial phase of the live-tock industry of the five provinces, may be obtained from the following figures: During the past year, over 1,000,000 cattle, 260,000 calves, 1,000,000 hogs and 500,000 sheep and lambs were handled through public stockyards operated under the Act. The value of that amount at public sale was approximately \$40,000,000 for cattle, \$2,350,000 for calves, \$18,500,000 for hogs and \$3,500,000 for sheep and lambs, a total value of \$63,850,000. The equipment and service necessary to the handling and sale of approximately that total volume and value of business is under the constant supervision of the Stockyard agents. In addition a detailed record of every sale was made, recorded and despatched to headquarters for statistical purposes, and used both for the Stockyards office and the Ottawa office as a basis for market letters, market reports, and market wires.

### OUTLINE OF WORK

1. The enforcement of regulations made under the Live Stock Products Act, consolidated and revised in 1923, has resulted in the bonding of commission men, operating on public stockyards, efficient and standardized operation of live stock exchanges, the elimination of undesirable traders and practices on the yards, the regulation of charges made on the yards by the stockyards company and by commission men for services, improvement in accommodation for live stock, and the regulating of the quality and charges on feed supplied by the stockyards companies.

2. Officers of the branch, located at the Central Stockyards at Montreal, Toronto, Winnipeg, Calgary, Edmonton and Prince Albert, classified and grad d. for purposes of information, all live stock offered for sale, obtained details as to the selling price, origin and disposition of the stock and on the general con-

dition of supply and demand.

- 3. The stockyards offices supplied the press with daily market news letters and representative live stock sales. The need for absolute accuracy in commercial reports is recognized, and a superior quality of material is the object; these together with the extended weekly, monthly and annual analysis of supply and demand, have practically supplemented other sources of markets information. The effect has been the standardization of market reports throughout the Dominion, guaranteed accuracy and quick service, where heretofore many contradictory ambiguous, or unreliable statements of market conditions were in circulation.
- 4. The Inter-Stockyards Telegraph Service inaugurated during 1919, consisted of an exchange of market wires between stockyards offices, for a public posting, so that a knowledge of trade conditions on one market may be available on all other markets as soon as the day's trading is established. These telegrams are prepared by the stockyards agents after a careful analysis of the condition of trading and wired each day as soon as the market is established to the other stockyards in Canada. Previously, only firms which could afford to have a private telegraph service were able to benefit by immediate knowledge of the day's trading conditions at other than their own market. As the trend of business on one yard may greatly affect that on other yards, this service is of tremendous value to the trade, and very effective in bringing about a clearance of stock.
- 5. The Daily Markets Telegraph Service inaugurated in 1919 was continued. This consisted of analysis of the condition of supply and demand, telegraphed over the wires of the Canadian Press, Limited, for publication in the daily press of Canada. These wires are prepared by the officers at each of the yards, at 11 a.m. and 4 p.m. daily, and appear the same evening and the following merning in practically every evening and morning paper in Canada. These have a reputation as being absolutely reliable.
- 6. A Weekly Markets News Service is prepared and mailed to the agricultural press of Canada, to district representatives of Agriculture, to a selected producers' mailing list, and to the various Provincial Departments of Agriculture. This service consists of an analysis of the week's supply and demand for live stock; comments on prospects for future markets, statistical tables showing comparatively, the grading, numbers, average price, price range for bulk of sale, and top price of all live stock effered for sale, the disposition and comparative receipts of the same, the gradings of hogs under official grades, and the exports of live stock.
- 7. In order that the weekly agricultural newspapers and financial trade journals might have the most up to date markets information obtainable, a special market report was prepared on the opening market of each week, by the stockyards representatives and sent to the farm press in time for publication in the current issue.
- 8. Each month, publicity was given to the live stock industry by the distribution of interesting information on crops, weather condition, live stock and allied industries, as regards both domestic and foreign fields. This information is distributed through the regular mailing list.
- 9. Memoranda on production, distribution and consumption of live stock and live stock products, both demostic and foreign were prepared for the information of officers of the department.
- 10. Numerous articles and press notices touching on the live stock industry prepared, either voluntarily or by request, for publication in the press.
- 11. The division continued the building up of an information service with reference to statistical condition of local production and distribution of live

stock, general condition under which live stock production was undertaken, the foreign live stock situation; world's animal foodstuffs situation; the condition of the import and export trade in live stock and live stock products, and financial conditions influencing the industry.

- 12. The Division undertook the recording of the point of origin, class, grade and sex of all stock offered for sale at stockyards. It is estimated that the total marketings including direct shipments for the year exceeded three million five hundred head. Our records cover the sales trade during the past four years and are compiled in such a way as to be of immediate value in estimating the condition and extension of the marketable surplus, either locally, provincially, or for the Dominion. Policy to bring about improved conditions as regards production for markets and marketing is receiving definite direction through the medium of these records.
- 13. The service obtains from the various packing plants throughout the Dominion, weekly statements as to shipping station of private or country purchases. As from 40 to 70 per cent of the annual slaughterings by inspected establishments do not appear on the public market, the aptness of the information obtained can be appreciated.
- 14. Through arrangement between the Departments of Agriculture and Customs, the branch is now recording and issuing information covering the origin and destination of all classes of live stock exported from the Dominion. This information completes the scheme for a full record of the total movement of Canadian live stock during the period of the year, and allows for the working out of formula on which to estimate probable proceeds and distribution.
- 15. A connection has been made with British firms interested in the Canadian trade in store cattle, with importers and distributors of Canadian freshkilled beef and with distributors of Canadian bacon, and has established a clearer understanding of the problems involved in the export trade in relation to the British market.
- 16. A Weekly Cable Service on the British Market for Canadian cattle and bacon is telegraphed by the division, to the Canadian newspapers. The information is being supplied by the most reliable operators on the markets at Glasgow, Liverpool and London. These cables are elaborated in the branch and given the widest publicity possible through the medium of the Associated Press of Canada and other mediums of publicity.
- 17. A daily wire service is operative between the stockyards officers and the United States markets, with a view to obtaining exact and immediate knowledge of the prospects for export. Considerable financial benefit to the live stock industry is resulting from this service, shippers having been better able to estimate the margin between domestic and foreign market prices, before making shipment.
- 18. Reports consisting of the classification and grading of all classes of meat animals shipped by drovers, packers, buyers and farmers organizations, from all shipping points in Quebec, Ontario, Manitoba. Saskatchewan and Alberta is being supplied to producers and the trade.
- 19. Purchasers of live stock under the Car Lot and Free Freight Policies of the branch were again given assistance by the stockyards agents. The activities of the agents greatly facilitates the movement back to country points, and as well materially encourages the conservation of desirable stock.
- 20. The Fifth Annual Review of the Live Stock Meat Trade Situation was published and distributed.
- 21. The Third Annual Report of the Origin and Grades of Commercial Live Stock was published and distributed.

22. The administration of the policy whereby immature calves offered for sale en public stockyards are subject to condemnation, is administered through the Live Stock Commissioner by the stockyards representatives. Suitable calves are allowed to be shipped for store purposes. This policy has been effective for a number of years, and has resulted in marked improvement of the quality of veal.

### WORK RECENTLY UNDERTAKEN

The Markets staff in the branch is taking care of the compilation of grading and prices paid on the new basis of sale under the Hog Grading Policy. The trend of production and marketing is being interpreted from the records submitted by the official graders and statements on which to base practical and close-up publicity work are being prepared, as also a statistical report on the first year of grading.

The stockyards agents are assisting the graders in every way possible, co-

operating in promoting satisfactory development of the work.

The branch, through this division, has developed a form of Trust Account for the live stock commission houses at stockyards, with the primary object of protecting the industry against financial losses, so as to promote the com-

mission business to a higher plane than formerly.

The stockyards agents have extended their activities toward promoting familiarity with required market types of live stock. On request, the agents address meetings, pay visits to farms for the purpose of grading the stock into the various classes and commenting on the commercial value of each, and as well encourage the clearance of unsuitable feeding stock and the purchase of that of good feeding type and quality.

All activities in the division are designed to develop the commercial end of the live stock industry, and a steady improvement is perceptible in many

phases of marketing operations.

During 1924-25, this division will confine its efforts to perfecting and enlarging the projects already in operation.

### THE SEED BRANCH

The Seed Branch maintains laboratories or analytical services for the testing of seeds, feeding stuffs and fertilizers; encourages the production of superior seeds for domestic requirements and export; develops the marketing of seeds, feeding stuffs and fertilizers; and provides an inspection service for the enforcement of the Acts which control the sale of these products.

### SEED TESTING AND FEED ANALYSIS

During the year April 1, 1923, to March 31, 1924, 41.291 samples of seed and feed were received and analyzed, the fermer for purity or germination, in most cases for both, the latter for the determination of ingredients. The following table gives an analysis of the number of samples received in each of the five laboratories, and their sources:—

	Quebec	( Attanta	Toronto	W 1. 1. 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(''.:::
Trade Costoms	976 976 43 875	9,985 1,046 1,139 90 2,632	5,108 2,376 401	3,659 2,850 98 187 171	4,410 1,821 140 40 1,328
17. t.:	2,864	14,892	8,831	6,965	7,739

The Quebec laboratory was opened officially on January 1, 1924, and the number of samples given for Quebec in the above table was received during the three months.

Trade refers to samples of seed sent in by merchants, farmers and institutions.

Customs refers to samples of seed taken from imported shipments by the customs officials.

Official includes both seed and feed samples taken by inspectors from lots which are sold or offered for sale and suspected of violating the Seeds Act or the Feeding Stuffs Act. Prosecutions are based on the results of analyses of such official samples.

Feeding stuffs includes all feeds, and in addition condiments and tonics sent in by farmers, merchants and others who desire to know the approximate composition and value.

Investigation comprises all work of an experimental nature.

### SEED INVESTIGATION

During the past year the methods of testing seeds, especially with regard to germination tests, have been somewhat modified. All changes are based on a considerable amount of investigational work. Some special work commenced in former years has been carried further and new problems have been investigated between trade seasons, as follows:—

- 1. Standard samples supplied by the Association of Official Seed Analysts of North America, and another series supplied by a European station, have been tested with a view to standardizing, in so far as practicable, laboratory methods of seed testing.
  - 2. Longevity tests of field root and garden seeds have been continued.
- 3. A series of tests on a broad basis has been commenced with a view to ascertaining the influence of storage conditions on the vitality of different kinds of seeds.
- 4. The studies on the characteristics of Canadian grown red clover seed have been continued. This work was undertaken in collaboration with European and American workers.
- 5. Investigations on the bulking and sampling of seeds, in connection with establishing a tolerance formula applicable to variations between two tests on samples taken from the same lot.
- 6. Investigation of different methods of germinating certain kinds of seeds, especially those brought under grade by the Seeds Act, 1923.
- 7. Study of new methods for determining the percentage of other cultivated seeds occurring in clover and alfalfa seed.
  - S. The influence of diluted solutions on the germination of certain seeds.

#### SEED COLLECTION

The collection of economic and weed seeds has been revised in accordance with the new Seeds Act. It contains 100 samples in glass vials which are labelled with the common names, and includes besides certain grass and clover seeds, the primary and secondary noxious and the common harmful or useless weed seeds found in Canada. They are arranged in numerical order with key of scientific names, and are retained by steel clips in a heavy cloth-pasteboard box. The price of the collection is five dollars prepaid in Canada.

#### MICROANALYSIS OF FEEDING STUFFS

The feeds examined in the laboratory during the year may be summarized as follows:—

Millfeeds	165
Screenings	95
Miscellaneous	
Total	491

A number of the millfeeds were sent in by individuals who had suspected them of being injurious to the health of animals or had found them unsatisfactory for feeding purposes. It is quite probable, however, that the amendment to the Feeding Stuffs Act, whereby wheat by-products are sold unmixed, will do away with further complaints.

The elimination of screenings as an adulterant of millfeeds naturally led to an increased quantity of mill screenings on the market. To ascertain the average quality of such feeds as percentage analysis was made of 56 unground samples. This investigational work also provided a valuable addition to an already large collection of standard reference samples.

In the summer of 1923 a general survey was made of a number of concentrates and condimental feeds on the market. It was found that on the whole they contained the ingredients claimed by the manufacturer on registration, but a percentage determination of ingredients showed that this list was by no means an index of the quality of the feed. In some cases, indeed, where only a small fraction of one per cent of a cereal or condiment had been added and the feed was not thoroughly mixed in the process of manufacture, more than one sample of the feed had to be taken before even the slightest trace of said ingredients was detected on analysis.

Many of the other feeds examined showed a varied use of by-products as ingredients. Some of these feeds were of very poor quality but the high grade of a few others would lead to the belief that, in judicious combinations, most by-products could be utilized to good advantage.

Feed investigations were conducted as follows:-

- 1. Method of determining mould content of a sample of feeding stuffs and the effect on this content of shipping the sample in air-tight glass containers.
- 2. Comparison of a cereal by-product with the chop manufactured from a low-grade sample of the same cereal.
- 3. Microanalytical studies in the qualitative and quantitative determination of ground feeding stuffs and stock tonics.

### THE SEED DIVISION

The Chief of the Seed Division devotes attention to that part of production pertaining to interprovincial and interdistrict commerce in seed supplies, and to the international trade in seeds of all kinds.

Laws and regulations applying to the export and import of seeds have a very important bearing on Canadian seed supply. The trend of the trade in many kinds of seeds would seem to indicate that unless our seed control regulations are equivalent to those of other countries we are apt to have on our markets too much of the seed of a quality that cannot be marketed to advantage in those countries because of their higher standards and more efficient control.

#### THE SEEDS ACT

The Seeds Act, 1923, with the regulations made by the Minister of Agriculture, came into operation November 1, 1923, and is proving a very successful means of preventing the marketing of inferior seeds, both home-grown and imported. The favourable reception accorded the Act and grade standards has been due in no small degree to the consultation with advice of the Advisory Board appointed under the Act, and to the thoughtful deliberations given the Bill by the Agricultural Committee of the House of Commons before the Act was finally passed and made law.

Several pleasing comments received from Canadian and United States sources more than compensate for a few adverse criticisms from parties who have been restricted from handling their seed business in the same manner as was

their custom in the past.

In connection with the standards contained in the regulations it is proposed to make such changes from year to year as ought to be made to provide for the variations in each season's crop. Provision is made to have the Advisory Seed Board, which is composed of equal numbers of representatives of farmers and seed merchants, meet each fall and make recommendations in this connection. The Minister has power to make changes in the regulations without the necessity of amending the Act.

### CANADIAN SEED EXHIBIT AT BRITISH EMPIRE EXHIBITION

A thoroughly representative Canadian seed exhibit was selected and prepared for display at the British Empire Exhibition. The aim was to secure:

First, an educational exhibit showing the varieties of seeds originated or improved by plant breeders and particularly well adapted to northern climatic conditions; and

Second, a commercial exhibit showing representative samples of seed

available for commerce in car lots for both home consumption and export.

Thirty boxes of seed, of approximately six hundred pounds each, were assembled in Ottawa and shipped to London in care of the Canadian Exhibition Commissioner. Suitable pictures to illustrate seed production and marketing, and sheaves of grain, grasses and clovers for decorative purposes, formed a part of the exhibit. This material was collected from various Dominion and provincial plant breeding stations, individual growers, and the wholesale seed trade, and included the first prize Canadian championship exhibits at the larger Canadian shows and at the International Hay and Grain Show, Chicago.

### INVESTIGATION

In connection with the control of the trade in field root and garden vegetable seeds, samples of the different kinds and varieties distributed by wholesale seedsmen are taken from the retail dealers and tested at Ottawa for vitality and genuineness of variety. The latter is determined in field tests conducted by the Forage Plant and Horticultural Divisions of the Experimental Farms Branch.

During 1923, 3,053 plots of field root and garden seeds were tested, and the notes taken on these tests will be used in revising standards under the regulations for the sale of these seeds in Canada. These plot tests, which are being carried on again this year with vegetable seeds only, will provide data for preparing a list of standard variety names and descriptions for addition as an appendix to the regulations under the Seeds Act. Members of the wholesale seed trade with whom this matter has been discussed approve the establishing of such a list, which will serve to simplify the advertising in seed catalogues principally through the elimination of the many synonymous variety names that are now carried by the Canadian trade.

#### CO-OPERATION WITH THE PROVINCES

With a view to encouraging the production of high grade, hardy, northern grown seed for commerce, subventions are paid to Provincial Departments of Agriculture towards conducting seed crop competitions, combined seed crop and cleaned seed competitions, seed fairs, and provincial seed exhibitions. The maximum amounts made available for each of these competitions from the Seed Branch appropriation are as follows:—

Standing field crop competition	\$ 50 (	00
Combined seed crop and cleaned seed competition	200 (	00
Local seed fair	75 (	00
Provincial seed exhibition	600 (	00

Any one agricultural society is eligible to conduct competitions, including either a field crop competition and seed fair, or a combined seed crop and cleaned seed competition and seed fair. The subvention grants are payable to the Provincial Departments of Agriculture on the basis of two-thirds of the premiums paid by the provinces in prize money, but shall not exceed the maximum amounts above named. The provinces pay the cost of organization and judging, so that the expenditures by the Provincial and Dominion Departments of Agriculture are about equal.

The subventions paid by the Seed Branch on account of these competitions during the fiscal year ending March 31, 1924, were as follows:—

### STANDING FIELD CROP COMPETITIONS

	Numb	er	Amount
Prince Edward Island Nova Scotia. New Brunswick. Quebec. Ontario. Manitoba Saskatchewan Alberta	26 120 248 36 167	S	180 00 999 95 5,550 00 9,135 93 1,222 79 5,634 65
	605	\$	22,723 32
COMBINED SEED CROP AND CLEANED SEED CO	MPET	IT	IONS
Prince Edward Island  Nova Scotia  New Brunswick	9	\$	658 32 226 33
Quebec Ontario Manitoba Saskatchewan Alberta	29 45 2 1		2,950 00 8,842 00 210 00 183 33
	89	\$	13,069 98
LOCAL SEED FAIRS			
Prince Edward Island Nova Scotia New Brunswick Quebec Ontario Manitoba Saskatchewan Alberta	6 5 75 8 14 28	\$	366 16 323 66 3,711 30 251 80 783 85 1,262 82
	136	\$	6,699 59

#### PROVINCIAL SEED EXHIBITIONS

Prince Edward Island  Nova Scotia  New Brunswick  Quebec  Ontario  Monitobo	1	\$ 600 00 385 00 822 99 600 00
Manitoba Saskatchewan	1	495 34
Alberta	•	
	6	\$ 2,903 33

In the case of British Columbia an annual grant of \$2,500 is paid to the Department of Agriculture towards encouraging the production and marketing of field root and garden seed. The Provincial Department of Agriculture authorizes the expenditure of an equal amount for this purpose.

### ASSISTANCE TO CANADIAN SEED GROWERS' ASSOCIATION

The Canadian Seed Growers' Association is a national organization of farmers who specialize in the production of Registered and Extra No. 1 seed. They multiply for commerce the foundation stock seeds called "Elite Stock Seed" produced by Dominion and Provincial Experiment Stations and sometimes by individual growers. Registered and Extra No. 1 seed provides much of the seed stocks for field crop competitions, local seed fairs and provincial seed exhibitions.

The association office functions as a registration bureau for seeds; maintains systematic records of their history, pedigree, disposal and performance; directs the work of the growers, and acts as a connecting medium between them and the Dominion crop and seed inspection services; publishes a seed crop catalogue; and serves as a clearing office for marketing.

Complete information as to the work of the association may be obtained from their Annual Report published in 1923. Financial support from the Seed Branch was continued during the past year to the extent of \$10,000.

### THE FEED DIVISION

The Feed Division is primarily concerned with the administration of the law governing the sale and inspection of live stock and poultry feeds. Those products which are subject to the provisions of the Feeding Stuffs Act are divided into three main groups, namely, commercial feeding stuffs, flour mill by-products, and chop feeds.

Commercial feeding stuffs include the numerous ready-mixed feeds offered in the trade, many of which are sold under proprietary names. Because of the extent to which by-product materials enter into the manufacture of these feeds it had become an increasingly difficult problem for purchasers to ascertain their true value or worth, or to detect adulterants that might be present. The control exercised under the law over manufacturers and their methods of naming, labelling and guaranteeing such products, has had a marked effect in preventing fraudulent and misleading practices and in maintaining uniformity in composition and quality, and has greatly facilitated the economical purchasing of concentrates where feeders have found it necessary to supplement home grown fodders.

In view of the numerous and wide-spread complaints arising out of the practices of millers in adulterating their wheat millfeeds with the screenings removed from the wheat before milling, special attention has been given to this problem. Not only was this practice generally condemned by feeders, but it

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was a stumbling block in the way of the effective standardization of the several wheat by-products. An amendment to the Feeding Stuffs Act was passed by Parliament to correct this situation, and became effective from October 1, 1923. This amendment, together with the regulations thereunder, entirely prohibits the adulteration of wheat millfeeds with screenings, scourings, or any other foreign materials, and standardizes all flour mill by-products both as to name and chemical composition, as follows:—

Name	Minimum	Minimum	Maximum
Bran	p.c. 15.00 16.00 16.50	p.c. 3.50 5.00 3.50	p.c. 11.50 8.00 4.50 2.00 8.00

The legal construction placed on this amendment gives it the further effect of making unlawful the use of pure wheat offal in the manufacture of commercial mixed feeds. While such an application has met with both opposition and support, according as the interests concerned are affected thereby, there is general accord that this provision, insofar as it is necessary to prevent a reversion to the former practices of adulterating milliceds with inferior or worthless

material, should be carefully guarded.

Investigation as to the classification and quality of screenings removed from the western grain crop at the terminal elevators, have been continued. It is now the general practice at terminal elevators to reclean these screenings and separate them for commerce into several more or less distinct classes of material. With the co-operation of the Department of Trade and Commerce, conventional standards of quality have been established for the various classes under the designations, Standard Recleaned Screenings, Oats Scalpings, Elevator Screenings, Refuse Screenings, and all shipments booked out are covered by grain inspectors' certificates bearing the grade designation of the material. There is little or no market in Canada for screenings which have not been recleaned to remove deleterious fine weed seeds and inert matter. The value accruing from the establishment of standards is, however, reflected in a domestic demand for the recleaned grades, practically equal to the supply. These recleaned grades, while sufficiently free from deleterious weed seeds and materials to render them palatable and wholesome for stock feeding purposes, nevertheless carry sufficient weed seeds of western origin to make their transportation to eastern provinces in the whole condition a matter for growing concern.

During the past year representative collections of milling and industrial by-products which are commonly employed in the manufacture of commercial feeding stuffs, have been assembled and supplied to all the principal agricultural

colleges and schools throughout the Dominion.

# MARKETS AND FERTILIZER DIVISION

#### MARKET REPORTING

Commencing November 21, 1923, seed, feed and fertilizer market reports covering Eastern Canada and important American and European markets were issued every two weeks in English, and since January first in French. The object is to supply farmers and dealers with authoritative information as to

current supply, demand and prices of seed, feed and fertilizer. Interest in these reports is increasing as their value is becoming known, the mailing list having reached 8,000 by March 31. Information for these reports is received from 460 correspondents in Eastern Canada. Markets information from other countries is gathered through the Canadian Government trade commissioners and through direct correspondence with the Department of Agriculture, Washington, D.C. In addition to providing these reports through the mails, weekly summaries of seed, feed and fertilizer market conditions are broadcasted from the Canadian National Railway radio station, C.K.C.H., Ottawa.

### SEED MARKETS EXTENSION

The demand from farmers' organizations for information regarding seed warehouse plans and machinery continues to increase from year to year. Particularly in the seed producing districts of Ontario and the Prairie Provinces, farmers' organizations engaged in assembling and distributing farm supplies of various kinds are proceeding to reconstruct their warehouses with a view to storing, cleaning and shipping seed. In some districts there is a demand for plans and specifications of a small seed elevator suitable for handling local seed production co-operatively. Blueprint plans and specifications of this type of elevator were prepared by the Public Works Department in conjunction with the Seed Branch, and a copy was placed in the office of each county agricultural representative of the Provincial Departments of Agriculture. Interested persons may study them there free of charge, and if considered suitable for their purposes, may procure a complete set from this office at a nominal charge of \$2. If elevators are constructed, using at least some of the ideas contained in these plans, they should prove satisfactory from the standpoints of economy and efficiency in handling seed.

#### FERTILIZER REGISTRATIONS AND RENEWALS

Under the provisions of sections 3 of the Fertilizers Act, 1922, registrations and renewals of registrations expire on July first following the date of issue, but may be renewed from year to year.

The total fees collected for registrations and renewals amounted to \$7,530.

The principal kinds of fertilizer for which application for registration was made include:—

- (1) chemical fertilizer of different but complete formulae;
- (2) fertilizer carrying organic nitrogen and phosphoric acid of different but complete formulae;
- (3) bone fertilizers;
- (4) tankage;
- (5) low grade nitrogen, phosphoric acid and potash materials which are not exempt from registration under Section 8 (b) of the Act.

A Fertilizer Advisory Board meeting was called at Ottawa in July, 1923, and on the recommendation of the Board additions were made to the regulations under the Fertilizers Act. These additional regulations have for their purpose the further limitation of the use of brand names and statements of guaranteed analyses, with a view to protecting the purchaser against being misled in buying fertilizer. Definitions were provided also for fish scrap, bone meal, and bone flour.

The results of analyses of official samples of fertilizer taken during the registration year ending July 1, 1923, were published in pamphlet form and distributed to interested persons. A total of 430 samples of fertilizer were taken

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by inspectors and analyzed by the official analysts. Three hundred and fourteen of these represented different brands of mixed fertilizer and fertilizer materials offered on the market. Based on the results of official analyses compared with the guarantees of vendors, the 314 brands may be classified as follows:—

2. 3. 4.	Found to meet requirements of guarantee.  Found to meet guarantee by compensation.  Found deficient in excess of legal limits.  Offered without the guaranteed analysis on the package, label or invoice  Offered without being registered as legally required.	24
	Total	314

A surprisingly large number of apparent infractions of the labelling and registration provisions of the Act were recorded. These infractions when investigated by inspectors were found to be due chiefly to a lack of knowledge of the Act and regulations. Court action was taken only in cases where violations were of a flagrant nature, as it was the first year of the operation of the Fertilizers Act, 1922, and the trade had not yet adjusted its business procedure to meet requirements. The publication of the official analyses has supplemented in a marked degree the work of the inspection staff in enforcing the Fertilizers Act. From the results of analyses the interested public is able to select those firms whose products are up to their guarantees of analyses.

In April, 1923, a fertilizer test competition was planned for agricultural societies. One was conducted last year by the Brompton Agricultural Society of Quebec, and it proved a marked success in teaching the farmers how to use fertilizers profitably on their own farms. The supervision of the competition was exercised jointly by the Seed Branch inspector and the Provincial Government of Quebec.

Representative fifty-pound lots of practically all the important materials used in fertilizer mixtures, and of brands mixed from these materials, were gathered for the purpose of putting up educational collections for use in agricultural schools. These collections with an explanatory pamphlet are now ready for distribution at a nominal charge of ten dollars.

### MARITIME DISTRICT

This district comprises the three provinces, Prince Edward Island, Nova Scotia and New Brunswick. A district office is maintained in the Canadian National Railway station building, Truro, N.S. The work is directed by a district inspector, and four seasonal inspectors are employed during the busy season, more especially of the seed and fertilizer trade.

### SEED PRODUCTION AND SUPPLY

The season of 1923, although one of remarkable growth, was not in most sections of this district best adapted for the production of farm seeds. Unfavourable weather delayed ripening, but autumn coming in and continuing fine resulted in a good crop of well filled oats and barley in almost every section of the Maritime Provinces. The only sections having a shortage of seed oats were in the northeastern counties of New Brunswick and parts of Cape Breton. Wheat did not develop so well, but in most cases was fit for seed.

The seed fairs, with one exception, were held in connection with the combined seed crop and cleaned seed competitions. In New Brunswick the standing field crop competitions will be replaced in 1924 by the combined seed crop and cleaned seed competitions, with special attention to seed oats, clover seed, and potatoes for seeding purposes. During the past season a combined competition was held in one county in oats and in another county in wheat.

The only seed fair in the province was the Provincial Fair at Fredericton, which brought out a good exhibit of seed. In Prince Edward Island combined seed crop and cleaned seed competitions were held, one in each of the three counties in wheat, oats and barley. Eighty-eight entries produced over 35,000 bushels of Banner oats grading Registered and No. 1. At the seed exhibit held during "Farmers' Week" at Charlottetown there were over sixty entries of the finest Banner oats ever shown in Prince Edward Island, practically every sample weighing from forty to forty-three pounds per measured bushel. In Nova Scotia there were three combined seed crop and cleaned seed competitions in oats, with a total entry of forty-seven. In the Pictou county competition every competitor had good clean seed at bin inspection. In Antigonish and Inverness counties, owing to bad harvest weather discolouring the grain, only a little more than half entered for bin inspection. This seed has all been disposed of locally. In connection with these competitions two seed fairs were held, one at Antigonish and one at Mabou. The Maritime Seed Fair at Amherst, while exhibiting a good quality of seed, was not so large as the previous year, owing to the very late season delaying the farmers in threshing and cleaning their seed. Our inspectors acted as judges at all these fairs, which, with the competitions, are conducted by the Provincial Department of Agriculture with the financial assistance of the Seed Branch. The district inspector assists in training the judges for the competitions.

Prince Edward Island growers are supplying the seed oats shortage in northeastern New Brunswick, where, owing to the very dry season and shortage in the hay crop, many of the farmers cut the oats green for fodder. They are also sending considerable quantities to eastern Quebec. Quite a large number of orders for Registered seed oats have been filled for eastern Nova Scotia and New Brunswick points. This is largely for seed crop competitions this

season.

#### INSPECTION

Inspection work is fairly expensive in this somewhat scattered district, extending from Sydney to the head of the St. John river in New Brunswick, with many towns and villages away from the lines of railways. Last year 1,296 visits were made to points requiring inspection; 1,067 inspections were made of seed warehouses, 1,822 of feed, and 154 of fertilizer. There were six suspected violations of the Seeds Act, and as these were of a minor nature only one was recommended for prosecution, which was successfully conducted. Of 169 samples of fertilizer analyzed some thirty were slightly to considerably below guarantee. Most of these shortcomings apparently occurred through lack of knowledge of the Fertilizers Act. One case was recommended for prosecution where the vendor seemed inclined to persist in violation of the Act, and he was fined a hundred dollars. Nearly all fertilizers analyzed later in the season were up to standard. Eighteen samples of feeding stuffs were sent in for chemical analysis and eight for micro-analysis. Some of these were suspected violations of the Act, and as they had their origin with feed manufacturers and milling companies in other districts they were turned over to the district inspectors concerned and were dealt with in a satisfactory manner. So far this season our inspectors have inspected and sealed 1.520 bushels of Registered and Extra No. 1 seed; 19 carloads of oats were inspected and graded No. 1, and one car graded No. 2.

#### EDUCATIONAL WORK

Samples of fertilizer were displayed, copies of the Seeds, Feeding Stuffs, and Fertilizer Acts were distributed, and information was given at a Seed Branch booth conducted at the Maritime Winter Fair, Amherst. The fertilizer inspector

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addressed several meetings on the Act and on the general use of fertilizers. The district inspector addressed a number of meetings throughout the district, and conducted seed judging classes at the short courses which were held at the Agricultural College, Truro, and in People's Schools at Lawrencetown and Mabou. At all of these, explanations were given of the three Acts under our administration. He and his staff judged at local fall fairs and at school fairs, and were always given an opportunity to explain the work of the branch.

# QUEBEC DISTRICT

The inspection personnel of this district consists of a district inspector, with headquarters at Quebec city, and six permanent and seasonal inspectors at outside points. In order to cope with the increase of work on account of the new laboratory established in Quebec during the year, three employees were added to the office staff. One of these was an inspector who was brought in during the rush season to take charge of grading.

#### SEED PRODUCTION AND SUPPLY

Seed production and supply is considered an important part of our work. To encourage this, 120 field crop competitions, 75 seed fairs and 40 combined competitions were held in the province during the year. There were 4,000 competitors for the field crop competitions, and 1,182 for the combined competitions. Through the combined competitions 52,000 bushels of seed oats and 12,480 pounds of clover seed were produced and tested in the laboratory. They graded as follows:—

	Registered and Extra No. 1	No. 1	No. 2	No. 3	Rejected
	1	%	%	%	C'é
Oats Clover	6	66 10	10 17	5 22	13 51

Over 25,000 bushels of No. 1 seed oats, produced in the combined competitions in the Montreal district, were marketed in Eastern Quebec at fifteen cents per bushel lower than the seed oats offered through the trade, and the growers received considerably more than they usually get for oats of the same quality.

Through an experiment conducted last year in co-operation with the Provincial Department of Agriculture, we were able to market this year one carload of Registered and Extra No. 1 Alaska oats. The price obtained for the growers was \$1.25 per bushel. This has encouraged them to organize for the production of this variety which commands a good market.

A new plan was introduced for the centralization, cleaning and marketing of clover and timothy seed in Quebec. A trial was made at Ste-Rosalie with two carloads of clover seed shipped by the farmers to the elevator of the cooperative society. The results have been satisfactory for both the growers and the society. This plan will enable the growers of clover and grass seed to put these crops on the market with greater facility, and will result in a greatly increased production.

#### REGISTERED SEEDS

Under the new Seeds Act the inspection work of the Canadian Seed Growers' Association was transferred from the Provincial Government to the Seed Branch. About 4,000 bushels of seed oats were registered, and the same

quantity was rejected on account of the presence of barley and bad colour, the latter being caused by the prevailing bad weather in the Quebec District last year. Most of the Registered seed oats was cleaned at Ste-Rosalie under the plan established for clover and grass seed. The market for this grade of seed was very good and the growers were well satisfied with the service obtained.

#### INSPECTION

The number of points covered by the inspectors during the year was 1,170 and visits were made to 1,308 seed merchants, 1,856 feed, and 219 fertilizer merchants.

With the introduction of the new Seeds Act more attention had to be given to the inspection of seed. This Act is so different from the old Seed Control Act that it will take two or three years for the dealers and farmers to become familiar with its provisions. Tolerance had to be exercised with the trade because of their lack of knowledge of this new legislation. The good results, however, will soon be felt, as Quebec was often made the dumping ground for cheap seeds with tags indicating in small type the presence of weed seeds. Several articles were written on this particular subject, and reports have come from farmers expressing their appreciation of the new Act which compels the seed dealer to sell under grade.

The reports on fertilizer inspection show that improvements have been made in the trade over last year. The violations were fifty per cent less than during previous years, and the farmers are becoming more familiar with the

different kinds of fertilizers and their relative values.

Our inspection of feeding stuffs has helped considerably in eliminating from the market low grade feeds which were sold at high prices. Although very few prosecutions were taken, co-operation from the large mills and conscientious dealers has forced out of the market the unscrupulous feed dealers who take advantage of the public by misrepresenting the material they offer for sale.

# FERTILIZER EXPERIMENTS

The demonstration organized last year in the county of Richmond, for the purpose of showing the farmers the kind, value and best way to apply fertilizers, is being followed with a lime demonstration. For these demonstrations 40 farmers are selected throughout the county. As the soil is very acid through that district very good results are expected from the work with lime. The fertilizer experiment gave specially good results with potatoes, some fields yielding as much as 200 bushels per acre in favour of fertilizers. With the other crops, namely corn and roots, there was practically no benefit.

#### EDUCATIONAL WORK

The inspectors attended the seed fairs held in the respective sub-districts and gave lectures on the new Seeds Act and the work of the branch. Fertilizers, feeding stuffs and seed production were discussed at special meetings throughout the district. Several articles were prepared and published in the agricultural press and weekly papers. Judging was done at the provincial seed fair and at some of the local fairs. The district inspector attended the monthly meetings of the Provincial Seed Board.

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# EASTERN ONTARIO

This district comprises eastern Ontario from York county, northern Ontario, as far west as lake Nipigon, the counties of Wright and Pontiac in Quebec. The district inspector has headquarters at Ottawa, and four permanent and seasonal inspectors are conveniently located in the district.

#### SEED PRODUCTION AND SUPPLY

Bad weather prevailed in northern Ontario for harvesting the grain crops. Much of the grain was damaged in colour and some in germination. Throughout eastern Ontario and western Quebec dry weather, which set in about haymaking time, affected particularly the late sown crops. Oats in many places did not fill well, and there was a large percentage of light weighing oats this year. The seed, however, proved to be vital and there is an adequate supply of seed grain. It is probable that in some sections farmers may prefer to feed their lighter oats and buy good western oats for seeding purposes. Central Ontario had a splendid crop of alsike seed estimated at 100,000 bushels, but the red clover seed crop was not so good as last year. A large acreage of red clover was saved for seed in eastern Ontario, but the most of it grades only No. 2, not on account of weed seeds but rather because of a large percentage of brown and shrunken seeds. Considerable quantities of alfalfa seed were produced, mostly in central Ontario, but there was a falling-off in sweet clover seed production. The barley crop was a very good one. The yield of garden peas was below the average on account of the very dry weather which prevailed about blooming time and later affected the development.

#### INSPECTION

During the spring special emphasis is laid on seed and fertilizer inspection. More attention is paid to feeding stuffs throughout the rest of the year. Some 2.340 places were visited and received 2.384 seed inspections, 3.058 feed, and 12 fertilizer, or a total of 5,079 farchouse inspections. There were discovered 216 violations of the Seeds Act, most of which were minor offences, 48 feed violations, and 4 fertilizer. Four prosecutions were successfully conducted, and several other cases were settled by adjustments between the parties concerned.

Thirteen agricultural societies carried on the combined competitions. This entailed about 200 field and 150 bin inspections. Other inspections were made for individual growers engaged in the production of high-class seeds, and the following kinds and quantities qualified for sealing in sacks:—

		Registere l	Extra No. 1	
Oats Barley Wheat		bushels 2,633 446 132	bushels 1,746	
	Total	3,211	1.746	

#### EDUCATIONAL WORK

Educational work was carried on at a number of exhibitions in the district. Assistance was given in conducting the eastern Ontario short course in field crop judging at the Central Experimental Farm, and also at a short

course held at New Liskeard. The seed department of the Ottawa Winter Fair was also under our direction, and special features was made of a competition in seed judging open to young farmers in eastern Ontario.

#### WESTERN ONTARIO

The Western Ontario District comprises that portion of Ontario west of and including the counties of York, Simcoe, Muskoka and Parry Sound. A district office and laboratory are maintained in the General Post Office building, Toronto. The organization for inspection includes a district inspector and staff at Toronto, with four permanent and seasonal inspectors stationed at convenient points in the district.

#### SEED PRODUCTION AND SUPPLY

Western Ontario is well adapted for the production of seed wheat, oats, barley, rye, buckwheat, peas, beans, corn, alsike, sweet clover, red clover, alfalfa and blue grass. In 1923 the alsike crop was above average, which increased the amount of seed available for export. Sweet clover is used largely for pasture and for ploughing under. Much of the seed has been exported and the supply which remains is not more than equal to the demand. Red clover was not a heavy crop and some imported seed will be required for the 1924 seeding. The alfalfa seed crop was the largest in the history of the district. The production of this seed has increased enormously. There is a sufficient amount of high quality seed to supply the assured heavy demand for seeding in Ontario, and some has been sold for export. The Peel County Alfalfa Seed Producers' Association offered for sale 3,500 bushels of No. 1 and 320 bushels of No. 2 seed, which was grown by sixty farmers. An average crop of blue grass seed for the district is estimated to be 96,000 bushels, and most of this is sold for export.

Large areas are devoted to the production of Dent and Flint corn, and a large percentage of the crop is saved as seed. Ontario grown seed corn is increasing in favour and in normal years the district will produce sufficient to supply the demand. The 1923 seed corn crop was much below normal. It suffered from early frosts and when harvested the grain was comparatively immature and contained a high percentage of moisture. During the early and mid-winter seasons heavy frosts seriously affected the vitality of the seed. The supply of good seed is therefore limited, and the amount of No. 1 grade is not sufficient to meet the demand. A considerable quantity will be offered as No. 2 and No. 3 grades.

Competitors of the combined seed crop competitions and members of the Canadian Seed Growers' Association produced large quantities of good seed grain, most of which graded No. 1. A satisfactory portion was suitable to seal in sacks as Registered or Extra No. 1, and the production of these grades of seed will be greatly increased during the coming year:

#### INSPECTION

During the year 1,054 visits were made to points requiring inspection; 3,321 warehouses were visited, namely, seed 2,096, feed 1,529, and fertilizer 118; 1,083 complaints were received including 316 seed, 591 feed, and 176 fertilizer. The number which proved to be suspected violations were, seed 78, feed 212, and fertilizer 48. There were 19 prosecutions under the Seed Control Act and 2 prosecutions under the Feeding Stuffs Act. Many of the violations were of a minor nature, in which case a warning has been issued and a record kept.

There was a decided increase in the number of field and bin inspections on account of various combined seed crop and cleaned seed competitions and

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organized associations for the production and sale of certified seed. Inspections were made of 175 fields of alfalfa, 317 fields of corn, 312 fields of oats, and 1 field of barley. There were 264 bin inspections, alfalfa 22, corn 38, and oats 204.

Seed inspected and sealed under grade:-

	Registered	Extra No. 1	No. 1	No. 2
	bushels	bushels	bushels	bushels
Oats	646 214	2,384		352
Total	860	2,384	5,175	352

There is an increasing demand for the better grades of seed, for standard feeds, and for fertilizers of superior value. The quality of cereals offered by farmers for local seeding is much improved and will be a strong factor towards increasing cereal production. Bran, shorts, middlings, feed flour, crushed oats, and screenings particularly are considerably improved in quality. Standard Recleaned Screenings have been purchased for feeding, but elevator screenings and refuse screenings are not in demand. Oats Scalpings are used sparingly as compared with Standard Recleaned Screenings.

#### EDUCATIONAL WORK

The district inspector was president of the Ontario Provincial Winter Fair, acted as judge of corn at the Essex Corn Improvement Association Exhibition and at the Peninsular Winter Fair, and as judge of seeds at most of the leading exhibitions. The permanent inspectors acted as judges at many of the seed fairs in the local districts, and delivered addresses on subjects pertaining to seeds, feeds and fertilizers.

Exhibits of seed at the Royal Winter Fair and the Ontario Provincial Winter Fair were sampled, analyzed and graded at the laboratory in Toronto as a basis for judging. Premiums were not awarded on seed which did not grade.

The annual meetings of the Ontario Fairs and Exhibitions and the Ontario Field Crop and Seed Growers' Associations were attended and addresses were delivered pertaining to seed growing. Addresses on production and judging of seed were given at Junior Farmers Association meetings. Merchants, manufacturers and farmers have visited the office at Toronto and received information and advice concerning the production, manufacture and sale of seed, feed and fertilizer, and the laws governing them. Inspectors have addressed meetings on the combined seed competitions, and made suggestions with regard to the sowing, harvesting, threshing, cleaning and grading of seed to be offered for sale. At several points addresses were given on the seeds, Feeding Stuffs and Fertilizers Acts. The inspection staff has worked in co-operation with the district representatives and other provincial officials in the production of seed, particularly alfalfa and corn.

# MANITOBA AND SASKATCHEWAN

This district extends eastward into Ontario as far as lake Nipigon. The district office and laboratory are located at 173 Portage avenue East, Winnipeg. Sub-offices are maintained at 216 Grain Exchange building, Fort William, and Post Office building, Regina, with a permanent inspector at each. In addition four seasonal inspectors are employed with headquarters at Winnipeg, Brandon, Saskatoon and Moose Jaw.

#### SEED PRODUCTION AND SUPPLY

Favourable weather prevailed during the 1923 season, resulting in heavy grain crops in Saskatchewan and northern Manitoba. Southwestern Saskatchewan had some trouble with grasshoppers which were successfully combatted. Southeastern Saskatchewan and more particularly southern Manitoba suffered seriously from rust, and heavy crops yielded poorly. On this account production of Regitered wheat in Manitoba was almost nil, but a surplus was produced in Saskatchewan.

The seed centre idea is being fostered by the Saskatchewan Department of Agriculture and the university, with several districts specializing in seed wheat, oats, barley, sweet clover, millets and brome grass. In Manitoba seed centres are being developed with sweet clover, alfalfa, corn and oats, and in northern Ontario are well known centres at Oxdrift and Emo. With the exception of Oxdrift the cleaning and marketing problem is causing seed growers concern and is being studied by a committee in each province.

During the year there developed a shortage of red clover, sweet clover, barley and flax. There was a plentiful supply of wheat and oats, and an increased amount of local grown corn, millet, etc. Interested districts in each province have been organized for the production of early seed corn.

Saskatchewan secured sweepstakes and second place for barley at the

Chicago International.

Six combined field crop and cleaned seed competitions with wheat were successfully conducted in Saskatchewan, one with wheat and one with oats in Manitoba, and one seed oat competition at Emo, Ont.

New diseases are becoming a source of anxiety, basal glume rot being

prevalent on wheat in the northern half of both provinces.

#### INSPECTION

Points requiring inspection received 722 visits. Stores and warehouse inspections were made for seed, 2,323, and for feed, 1,030. There were 63 suspected seed violations and 52 suspected feed violations. Two farmers and one company were prosecuted under the Seed Control Act. A Winnipeg milling company was prosecuted under the Feeding Stuffs Act for selling oats scalpings as No. 2 Oat Chop.

Inspectors reported fewer carload shipments of seed than usual, also less bulk seed stocked by retailers. On the whole there was improvement in quality and reasonable observance of regulations. Farmers are found selling seed without grade in violation of section 3 of the Seeds Act, 1923. The new Act resulted in an increased number of samples for laboratory test and grade.

Contrary to expectations, corn imported into this district for 1924 seeding proved of fairly high vitality, perhaps due to careful buying and the desire of our seed-men to handle No. 1 grade. Importations of carrot, parsnip and spinach cleared customs by narrow margins of vitality, and a few lots were deported. Some lots of vegetable seed had to be cleaned to remove noxious weed seeds before being released by customs officials. Customs receipts totalled 3,293,520 pounds.

Inspection of crops for registration by the Canadian Seed Growers' Association necessitated visits to 172 districts and over 300 farms, representing 19,000 acres of wheat, oats, barley, flax, rye and other seed crops. Only a small percentage of growers applied for seed inspection and scaling in sack. Slow demand, faulty system of cleaning and marketing, resulted in sales as

ordinary grain for ready cash.

# Inspections to March 31:-

	Registered	Extra No. 1
	bushels	bushels
WheatOats	10,322 5,384 150 60	1,538 2,150
Total	15,916	3,688

Feed manufacturers and dealers under close observation show improvement in quality of products and in tendency to observe the law. A close check on screenings particularly at Fort William indicated Standard Recleaned Screenings and Oats Scalpings to be of satisfactory quality. The inspector stationed at Fort William saw a sample of every shipment, and informed district inspectors regarding quality and necessary particulars of shipments en route to their districts.

#### EDUCATIONAL WORK

The district inspector attended the annual meeting of the Canadian Seed Growers' Association and led in the discussion of a paper on seed control. He attended the provincial seed fairs and acted as judge at Eaton's Exposition of Western Canada Farm Products. The Branch had a booth at Eaton's Exposition in which to demonstrate and meet the public. Meetings of seed growers were addressed by the district inspector. Several local meetings were addressed by field inspectors and a lecture was given to the students at Saskatoon.

Courses were arranged at the Manitoba and Saskatchewan Agricultural Colleges for men going out on crop inspection work. Following a staff conference at Ottawa the district inspector called together his field staff to review and plan their work and reach a better understanding of the new Seeds Act.

# ALBERTA AND BRITISH COLUMBIA

The organization in this district includes an inspection office and a seed laboratory at Calgary. The chemical analysis of feeds and fertilizers is performed by an official analyst at the University of Alberta, Edmonton. The trade is controlled by a district inspector, two permanent inspectors, one in each province, and four seasonal inspectors. The permanent inspector in British Columbia is also a seed production specialist.

# SEED PRODUCTION AND SUPPLY

Interest in the production of pure seed by farmers in Alberta has continued to increase. Growers now realize that if they are going to obtain the highest grade of commercial grain and thus secure the highest price, they must sow only pure varieties of grain. Alberta growers again brought distinction to the province and to Canada in securing so many high awards at the Chicago Hay and Grain Show. Major H. G. L. Strange won first placing and the Grand Championship in wheat, while another grower in the extreme north, at Grande Prairie, secured third. The same grower who secured highest awards in oats last year, Mr. J. W. Biglands, Lacombe, took first place and Grand Champion-

ship again this year. This honour has been captured by our growers for four consecutive years. Nunemaker Brothers, Brooks, captured highest honours on red clover seed, and Major Strange secured first place on yellow field peas. In all, our growers secured twenty-two out of thirty-five prizes in oats, five prizes in wheat, one in red clover, two in timothy, three in alfalfa, three in field peas, one in Durum wheat, one in white winter wheat, four in barley, one in rye, and one in flax. Such a large number of awards has been an excellent advertisement for Alberta, as it is recognized that this exhibition is unquestionably the best of its kind in the world. All Alberta growers competing in the cereal classes showed registered seed and are members of the Alberta Seed Growers' Association.

Field inspections were made for all growers of registered grain. Through the kind co-operation of the University of Alberta and the Provincial Department of Agriculture we were able to secure qualified officials to assist our inspectors in this work. A total of 375 inspections were made of cereal crops and 182 of crops of Grimm alfalfa. Our inspectors graded as Registered and Extra No. 1 the following kinds and quantities of seed:—

	Variety	Registered	Extra No. 1
Wheat Oats Barley Totals.	Ruby	2,528 18,547 9,650 16,751 640	bushels  172 3,313 3,501 5,645 15

Approximately four-fifths of this grain was cleaned and marketed through the provincial seed cleaning plant at Edmonton. The Provincial Government provided this plant and operate it for the benefit of the growers. Representatives from the executive of the Alberta Seed Growers' Association and from the Dominion and Provincial Seed Departments form the Provincial Seed Board, which acts in an advisory capacity in the operating of this plant and the marketing of seed. The experiment has worked very satisfactorily and has made it possible to place on the market a uniform quality of seed, which has undoubtedly been largely responsible for the success that our growers have attained in the profitable marketing of their product.

The season was very unfavourable for alfalfa seed, but about 100,000 pounds were produced, of which the following quantities have been inspected:—

	Variety	Registered	Extra No. 1
Alfalfa	Grimm	pounds 14,961	pounds 4,940

Approximately 440,000 pounds of timothy seed were produced, and of this amount the Pincher Creek district produced and marketed 212,000 pounds.

The United Seed Growers, Penticton, have been able to liquidate all their old indebtedness which was incurred during the war years. This organization is not, however, receiving the support of the majority of the seed growers in British Columbia, and it has been recommended to the Provincial Government that they take over their plant and run it in a similar manner to the

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operating of the cleaning plant by the Alberta Government. The following quantities of seed were produced:—

	Pounds
Peas (canners)	132,016
Peas (garden)	39,798
Beans (garden)	
Carrot (garden)	250
Onion	
Swede turnip	
Mangel	
Sweet corn	
Other small seeds	500

The growers are preparing to produce Registered and Extra No. 1 seed. as it is realized that only by producing the highest grades can a satisfactory profit be made. Recognition has already been given to 240 pounds of Sludstrup mangel seed which was graded Extra No. 1.

#### INSPECTION

Inspectors made 641 visits to 350 towns and cities, making 2,033 inspections. The inspections covered 843 seed dealers, 721 feed dealers, 82 fertilizer dealers, 49 feed manufacturing plants, and 14 fertilizer manufacturing plants. It was found necessary to have only one prosecution under the Seeds Act and one under the Feeding Stuffs Act. Inspectors have been giving a great deal of attention to educating seed merchants and dealers in regard to the new requirements under the Seeds Act, 1923. Merchants who understand the Act have expressed themselves as heartily approving the new requirements, which place recognition on the highest quality of seed.

The inspectors submitted 57 samples of fertilizers for analyses by the official analyst. The results indicate that many manufacturers were putting out fertilizers inferior in quality to their guarantee. This appears to have been done through a misunderstanding of the requirements, and efforts are being directed to educating the manufacturers in this connection.

They have also submitted for chemical analyses 138 samples of feeding stuffs. Because of the changes made during the year in the Feeding Stuffs Act with regard to the mixing of flour mill by-products, there has been great opposition especially from the smaller manufacturers who mix for the retail trade. Millers are found to be manufacturing within the requirements.

#### EDUCATIONAL WORK

The district inspector again acted as chairman of the Provincial Seed Board, also as vice-president of the Alberta Seed Growers' Association. These organizations endeavour to promote interest in seed production, and act in an advisory capacity to growers and to the Provincial Government in regard to the seed cleaning plant operations, the marketing of seed, the holding of local and provincial seed fairs, standing field crop and cleaned seed competitions. It was considered advisable to defer the establishing of another provincial seed cleaning plant in southern Alberta, but the one at Edmonton was operated day and night. Two seed inspectors were provided for this work.

A Provincial Seed Board has also been organized for British Columbia. The local seed inspector is a member of this Board and the district inspector is an honorary member. At the request of the Provincial Department of Agriculture the Board is making a complete survey of the possibilities in the production and marketing of seed, and when full particulars are available some changes may be made in the present arrangement of giving assistance to seed production.

The alfalfa growers in the Brooks district have organized into the Grimm Alfalfa Seed Growers' Association of Alberta, Limited, and with the assistance of the Canadian Pacific Railway have erected a seed cleaning plant valued at ten thousand dollars and equipped with the most modern cleaning machinery.

The timothy growers in the Pincher Creek district are organized as the Pincher Creek Co-operative Growers' Association and have this year installed their own cleaning machinery, which arrangement is working much more satisfactorily than the former one of shipping seed for cleaning at the Government elevator, Calgary.

Great interest has been aroused in the production of seed corn in the southeastern part of Alberta. Growers are finding that if proper strains are secured, profitable crops can be harvested. It is the intention to hold a provincial corn show at Medicine Hat this coming year to stimulate interest in this direction.

The district inspector judged and gave addresses at the provincial seed fairs in Alberta and British Columbia, and attended several meetings throughout the district in the interests of seed production.

# ENTOMOLOGICAL BRANCH

The work of the Entomological Branch, in addition to the administration of the Destructive Insect and Pest Act, comprised investigations relating to insects affecting field and garden crops, forest and shade trees, fruit crops, greenhouse and ornamental plants, live stock, etc. The officers attached to the Division of Field Crop and Garden Insects, Division of Forest Insects, Division of Foreign Pests Suppression and Division of Systematic Entomology, have all had a very active year as a result of which the department is in possession of further important information on the life habits and control of many of our important insect pests.

Under the direction of the Dominion Entomologist, the Regulations under the Destructive Insect and Pest Act have been administered in so far as they refer to insect pests. The following amendments to the regulations, relating to insects, were passed during the year April 1, 1923, to March 31, 1924.

By Order in Council passed on May 31, 1923, the Order in Council passed on May 21, 1922, was amended by adding the additional territory in the United States found to be infested by the European corn borer.

By Order in Council passed on June 26, 1923, the Regulations under the Destructive Insect and Pest Act, as established by Order in Council on July 17, 1917, and all amendments thereto, were rescinded, as on the first day of September, 1923, and revised regulations substituted therefor, which now appear as general regulations, foreign regulations and domestic regulations.

## DIVISION OF FIELD CROP AND GARDEN INSECTS

In the Prairie Provinces a further outbreak of grasshoppers occurred in 1923, particularly in the province of Alberta. These insects were materially reduced in Saskatchewan and Manitoba by the presence of natural enemies and disease. In British Columbia outbreaks were also investigated by our officers and systematic collections of species made, demonstrations in mixing and distributing poisoned baits given, and information generally disseminated at farmers meetings. In this latter province it has been established that by a proper rotation of the range lands the native vegetation is not seriously damaged by grasshoppers alone. The work of our officers is being supported by the Department of Lands for British Columbia so that a proper system of range rotation may be effected by the owners of stock, horses and sheep. One may expect that

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in due course the immense range areas of the interior section of British Columbia will be enabled to carry a greater quantity of stock in the years to come with

little depletion of the native vegetation.

Reports received from our officers indicate that the western wheat-stem sawfly now occurs in practically all of the wheat growing areas of Manitoba, and further, that it has extended its ranges in Saskatchewan and Alberta. The farmers in infested areas are recognizing the value of cutting the grain on the green side; in other words four or five days ahead of the regular time of cutting. Losses by this insect in Manitoba, while of a serious nature in 1923, were not so widespread or important as in 1922, being due in many localities to the saving of

the crop by cutting it on the green side.

The infestation of the European corn borer has been further studied and "clean-up" campaigns among farmers were organized in Elgin county, Ontario, early in the spring and autumn of 1923 to demonstrate the value of green farming in the control of this insect. Biological studies were carried on at Port Stanley, Harrow, and other points in southwestern Ontario to discover any possible variations in the life-history of the borer. The advent of this insect into the corn growing areas has brought very clearly to the front the absolute necessity of properly disposing of crop remnants. Better ploughing methods at stated intervals in the course of the year are being adopted and selective planting of corn is being practiced. These agricultural methods, while bearing upon the control of the European corn borer, are undoubtedly indirectly responsible for the control of other insect pests and for the better cultivation of crops. In the area which our officers have used for demonstration purposes there has been during the last two years a marked reduction in the corn borer infestation, and in areas where fields of corn were very seriously damaged in 1921, practically no commercial injury has since occurred. The insect, however, has spread into new townships at the present time. One hundred and seventy townships in Ontario are infested, covering an area of 13,266 square miles.

In the province of Alberta the control of the pale western cutworm has been the major problem for a number of years. An intensive study has been undertaken by our officers and we are now able to predict in large measure where serious damage is likely to occur on the basis of rainfall during the previous season. Furthermore, satisfactory control measures have been established in the matter of soil cultivation or the withholding of cultural operations in certain seasons of the year which harmonize with the life-history of the insect. This, of course, has resulted in much saving of crop in the southern sections of the

In the alfalfa regions of Alberta, the alfalfa thrips and the alfalfa seed chalcid are both assuming important proportions. The study of these two insects is only commencing but sufficient has been established to indicate that an early clipping of alfalfa, two or three weeks earlier than normally occurs, is sufficient to control these insects in alfalfa fields without endangering the yield of hay or

seed.

Other investigations carried on by officers of this Division related to the cabbage butterfly, root maggots, flea beetles, wireworms, potato insects, etc.

# DIVISION OF FOREST INSECTS

Important studies of the spruce budworm have been completed and are soon to be published. In 1923, the officers of this Division obtained additional data from the dead timber in different localities. Active budworm injury was not found in 1923 in Quebec or in the Maritime Provinces. A small outbreak was investigated in the Rainy River district of Ontario. Our recommendations regarding future outbreaks of this insect relate to the removal of mature balsam trees

and special methods of lumbering suitable to the locations, with a view to maintaining a healthy vigorous stand of timber throughout all eastern coniferous forests.

The study of the eastern spruce bark beetle in the Gaspé peninsula of Quebec has been continued and this has included surveys in infested areas as a result of which recommendations have been made to lumber companies concerned. This investigation will be continued while the opportunity is at hand so that needed information will be available for the future as well as during

the continuance of the present outbreaks.

Control work in connection with the pine bark beetles in British Columbia was continued in 1923 in co-operation with the Provincial Forest Branch. This control work has already saved an immense amount of valuable timber and it is expected that this co-operative work will continue so as to include all the infested yellow pine stands in British Columbia, as well as infestations in other timber trees. In August, 1923, an entomologist was appointed to conduct investigations in shade tree insects in the Prairie Provinces and a laboratory for this work was established at Indian Head, Sask. This work is being conducted in co-operation with the Dominion Forestry Branch and the Dominion Experimental Farms Branch. These investigations will cover: (1) a general survey of the situation with respect to insects affecting shade trees, (2) detailed inquiry into the most important and the most urgent problems and (3) methods of control. Our officer made a survey of the forest tent caterpillar outbreaks in 1923 in southern Saskatchewan and southern and western Alberta south of Edmonton. A study of shade tree insects has also been continued in eastern Canada, particularly at the forest insect laboratory near Aylmer, Que. The establishment of forest sample plots in various sections of eastern Canada has brought together a vast amount of valuable information regarding the injury caused by insects and other enemies. During 1923, further new plots were laid out in the provinces of New Brunswick and Quebec.

An exhaustive study of wood borers in fire-killed timber and logs has been incepted in the province of New Brunswick and already through studies made by our officers important recommendations have been made which resulted in savings to the New Brunswick Crown Lands Department of many thousands of

dollars in stumpage dues.

Other investigations conducted by officers of this division related to the satin moth, the larch sawfly, Douglas fir beetle, lodge pole pine beetle, etc.

# DIVISION OF FOREIGN PESTS SUPPRESSION

The work of the officers of this division has to do with the immediate enforcement of the regulations under the Destructive Insect and Pest Act in so far as insect pests are concerned. On account of the revised regulations under this Act, effective September 1, 1923, the work regarding enforcement has increased greatly. This work includes the issuance of permits for proposed importations of nursery stock from all foreign countries; the importation of nursery stock entering Canada from all countries other than the United States; the supervision of inspection headquarters at the importation ports maintained at St. John, N.B.; Montreal, Que.; Niagara Falls, Ont.; Ottawa, Ont., and Vancouver, B.C., the establishment and maintenance of quarantines and embargoes against foreign pests, studies of foreign pests likely to be introduced into Canada, etc. This work, which is largely of a preventive nature, has increased considerably during 1923. Not only have our officers been concerned in the examining of imported nursery stock to discover such pests as the gipsy moth.

brown tail moth and other insects which are carried on such stock, but they have also been conducting important scouting work within Canada as a result of which the spread of such pests as the European apple sucker and the European corn borer have been prevented. As has previously been pointed out, experience has shown the necessity for preventing as far as possible the introduction and spread of destructive pests and diseases. In the case of the European corn borer particularly, the double quarantine which has been placed on Middlesex and Elgin counties in Ontario has undoubtedly added very considerably in confining the serious outbreak of the corn borer in these sections of the province. The movement of corn from these counties is absolutely forbidden.

During the importation season of 1922-23 a total of 2,883,122 plants classed as nursery stock entered Canada from France, Belgium, Holland, Great Britain, Japan, İtaly, Luxemburg, Germany, Poland and United States. All of these plants were examined by inspectors and 71 shipments were found to be infested with foreign pests. The value of plants, trees, shrubs, vines and florists stock, but not including cutflowers, imported into Canada for the year ending March 31, 1923, was \$928,078.

The new fumigation and inspection building established jointly by the Federal Department of Agriculture and the Provincial Department of Agriculture for British Columbia was completed in the spring of 1923. It is one of

the most modern plant inspection buildings in existence.

The new regulations under the Destructive Insect and Pest Act which went into effect September 1, 1923, require all importers of nursery stock which includes trees, shrubs, vines, roots, perennials, green house plants, etc., to secure permits. All plants and plant products from countries other than the United States are subject to inspection.

The Dominion Entomologist is Chairman of the Destructive Insect and Pest Act Advisory Board and the Chief of the Division of Foreign Pests Sup-

pression is the Secretary.

The European apple sucker has been spreading gradually in Nova Scotia each season. Scouting is carried on annually to determine this spread and all infested areas are placed under quarantine. No nursery stock may be transported unless it is accompanied by either a certificate or a permit. The total area now infested by the apple sucker covers 3.750 square miles. During 1923. 237 certificates and 311 permits were issued for the movement of 103,381 plants.

Scouting for the gipsy moth was continued in the province of Quebec in the fall of 1923, the area investigated being adjacent to the international boundaries of New Hampshire and Vermont. This was done on account of the gradual spread northward of this pest. Early in October, a very serious infestation of the gipsy moth, comprising about 5,000 egg clusters was found in Albany township, Vt., one half mile from the Quebec boundary. To assist in this scouting work two trained scouts were kindly furnished by the United States Department of Agriculture. No egg masses of the gipsy moth have as yet been found in Quebec province.

The brown tail moth suppression work in New Brunswick and Nova Scotia was continued during the year. In New Brunswick no nests were found. In Nova Scotia 492 nests were found in 1922-23, as compared with 979 collected

the previous season.

In the province of Alberta in 1923, scouting for the alfalfa weevil was continued. A total of 491 farms were visited. As yet no specimens of this important pest have been discovered in Canada.

# THE DIVISION OF SYSTEMATIC ENTOMOLOGY

The maintenance and building up of the National Collection of Insects constituted the main activities of the officers of the Division of Systematic Entomology. During the summer months the time of the divisional staff is largely spent in making faunal collections of much interesting material. As a result of these activities more than 30,000 specimens were added in 1923 to the National Collection. During the year, 150 species of insects new to science have been described and types of these deposited in the collection. The value of the National Collection is becoming more and more apparent. Field officers of the Entomological Branch are now able to secure prompt and reliable determinations of insects occurring in their respective localities. Frequently these are of decided economic importance. Schools and other institutions have also during the year availed themselves frequently of the services of our entomologists.

Important studies have been made of the Ephemerid fauna of Canada, which insects are of considerable economic importance as food for fish. Further studies have also been made of Canadian Tabanidæ, known commonly as horse-flies. Other important studies have been made in the Tortricidæ (leaf-rollers), many species of which are of economic importance; Diptera, particularly the Asiladæ (robber-flies); Syrphidæ (hovering-flies); Aphididæ (plant lice); Orthop-

tera (grasshoppers); Thysanoptera (thrips), etc.

# NATURAL CONTROL INVESTIGATIONS

Through the courtesy of the United States Department of Agriculture in furnishing our officers with breeding material of an important parasite of the European corn borer, imported from France, excellent progress was made in building up a strong colony of the parasite in 1923 at our St. Thomas, Ont., laboratory. This parasite known as Habrobracon brevicornis is a very active one and during the year, from the original breeding stock 585,000 adults were reared and liberated in the more heavily infested corn borer districts of Ontario. As an indication of the work necessary in breeding this material, it is of interest to state that it was necessary to collect by hand approximately 50,000 corn borer larvæ to serve as hosts for the parasite.

The predatory mite, *Hemisarcoptes malus*, introduced into British Columbia in 1917, to prey upon the oyster shell scale, has been found to have practically exterminated the scale upon the trees in certain sections on which it was introduced. Recent examination of adjacent areas indicates that the mites are numerous and that they have become well established in surrounding orchards

In Nova Scotia, the apple sucker fungus, Entomophthora sphærosperma, has had considerable attention and much progress was made in the artificial spread of this fungus. For the first time in history this disease was grown artificially in cages and then spread from such cages into orchards infested by the apple sucker. By this means an epidemic was started among the apple suckers, nearly a month earlier than had been possible the previous year. The artificial spread of the apple sucker fungus in the Annapolis Valley, Nova Scotia, particularly in that section with Wolfville, as a centre, contributed to an important degree in increasing the apple crop in such section where many large orchards are located.

Further important data has been secured regarding the natural control of

the large larch sawfly, tent caterpillar and other important pests.

# FRUIT INSECT INVESTIGATIONS

During 1923, an important study of the codling moth in the province of Ontario was incepted, having for its chief object the discovery of a simple means of determining at what time the application of a "cover" spray will give

maximum results in preventing the injury known as "side-worm" injury. This investigation involves, among other things, a prolonged careful study of the effect of meteorological factors on the behaviour of the insect. During 1923, a marked increase of the fruit-tree leaf-roller was noted in the province of British Columbia. Control investigations have been concerned largely with establishing the value of miscible oil sprays. Much important information has been secured on the life-history of this insect.

In the province of Quebec our officers have demonstrated the control of the apple magget under commercial conditions by spraying trees in infested orchards with lead arsenate or calcium arsenate mixtures. Orchards in which the fruit two years ago was wholly destroyed by the pest, in 1923, gave excellent returns. The Fameuse aple is a variety commonly attacked by this insect, the magget of

which makes tunnels through the flesh, rendering the fruit unfit for use.

The apple curculio and the plum curculio have again required attention, the former in Quebec province and the latter in Ontario, as well as Quebec. Observations have been continued and further evidence of the value of arsenate of lead sprays at certain definite periods has been obtained. The control of both

of these orchard pests is very similar.

In the Okanagan Valley of British Columbia, the blister mite of apple has developed into an important pest. During 1923, experiments were conducted jointly with the Provincial Horticultural Department. This work has demonstrated under commercial conditions the value of dormant applications of lime sulphur (1-9), during a period in spring, to destroy the overwintering mites

upon the bud scales.

Due to a publicity campaign conducted in the Niagara district of Ontario, in co-operation with the grape growers, most of the vineyards infested with the grape leaf hopper were sprayed in 1923 and the outbreak was, to a very marked extent, brought under control. As a result of the investigations conducted by our officers the method of combating leaf hoppers has been perfected to such an extent that hopper injury can not only be prevented but the insect themselves can be reduced to absolutely insignificant numbers.

In the province of Ontario a special study of the rose chafer was undertaken. As a result of our control experiments it was again proved that severe injury by the insect to grapes, cherries, etc., can be prevented by proper spraying. Severe outbreaks of this insect occurred in most of the sandy sections of

southwestern Ontario.

Other important fruit insect investigations related to the biology and control of the strawberry root weevil, various bush fruit insects, etc.

#### INSECTICIDE INVESTIGATIONS

Important developments have taken place particularly with regard to improved and cheaper dusts and this work has meant large savings to many sections. Important progress was made in Nova Scotia in connection with the control of plant lice on truck crops through the application of nicotine impregnated dusts, requiring the invention and construction of suitable apparatus

and methods of application.

The apple magget, one of the worst pests of the apple is usually controlled by power sprays. In 1923, in Nova Scotia, our officers succeeded in perfecting a much more rapid and effective method of control through the use of a specially prepared poisoned dust. In 1922, growers in the Annapolis Valley in certain sections lost many thousands of barrels of apples through the ravages of this insect, whereas by applying the dust recommended in 1923, no damage from the insect resulted and the trees bore excellent crops.

Studies on the control of the strawberry weevil have proved successful and our officers are now able to recommend satisfactory control measures for this troublesome pest. A series of experiments for the perfection of sheep dips was commenced in 1923. Considerable time is devoted each season to the study and testing of standard insecticides sold on the market.

# Mosquito Investigations

Further investigational and control work was conducted at Banff, Alberta, in 1923, in co-operation with the Dominion Parks Branch of the Department of the Interior. Control operations were undertaken from April 16 to September 15, and during this period most of the time of an expert entomologist was taken up in supervision. Applications to mosquito breeding places of an improved oil for killing the larvæ were made as required and this method of control was the one especially practised. On the whole, fairly satisfactory control of the mosquito pest in the Banff district was obtained.

# LIVE STOCK INSECT INVESTIGATIONS

A special study of insects affecting live stock was undertaken during the year with the object of preparing a special bulletin upon the same. This latter was duly published. It discusses such important pests as horse flies, lice of various hosts, ticks, etc. Observations on live stock insects were also made at several of our entomological laboratories.

# INDIAN ORCHARD WORK

The work of the Supervisor of Indian Orchards in British Columbia is under the direction of the Dominion Entomologist. This officer is employed by the Department of Indian Affairs. During 1923, the progress of this work has been very gratifying. On some of the Indian reserves excellent orchard fruit has been raised, packed and graded, and sold for satisfactory prices. In some sections hay and grain are the staple crops grown, while in others special attention is being given to dairying, small fruit culture, etc. Special instructions have been given to the Indians regarding the control of the commonly occurring insects of the orchard and farm and demonstrations in spraying have been undertaken.

# ADVISORY BOARD ON WILD LIFE

During 1923, the Dominion Entomologist as the representative of the Department of Agriculture on the Advisory Board on Wild Life Protection, attended the meetings of the board. The departments represented on this board are Agriculture, Indian Affairs, Mines, Interior, Fisheries and Mounted Police. On February 6, 7 and 8, 1924, the Dominion Entomologist acted as chairman at an important conference of provincial and federal officials interested in wild life protection which was held in Ottawa under the auspices of the Canadian National Parks Branch.

## INTERDEPARTMENTAL COMMITTEE ON AIR OPERATION

During the year, the Associate Dominion Entomologist was appointed as the representative of the Department of Agriculture on the above committee, the members of which act in an advisory capacity in matters relating to the flying work required by the various government departments. Meetings of the board have been attended during the year by this officer.

# EXHIBITION WORK

During the year the Entomological Branch prepared special exhibits of insects and their work which were shown at the larger exhibition centres, such as Toronto, Ottawa and London. At the smaller exhibitions held in several of the provinces attractive exhibits were also made. At each of these exhibitions an officer of the Branch was present to give information of value regarding the control of insects, etc. These exhibits attracted a great deal of interest and undoubtedly assisted to an important degree in bringing the work of the Branch to the attention of the public generally.

# LIBRARY

During the year a number of important works on economic and taxonomic entomology have been added to the library of the Entomological Branch and considerable progress made in cataloguing the books, pamphlets, etc.

# FIELD LABORATORIES

Annapolis Royal, N.S.—Special efforts were directed by officers attached to this laboratory, to assist fruit growers and others in the control of destructive species of insects. The apple maggot which has been especially abundant in certain fruit centres was given particular attention as a result of which growers became familiar with the proper methods of control and thereby saved their crops. The strawberry we evil was also specially investigated and information relating to control disseminated among the growers. Important progress was made at the laboratory during the year in developing cheaper and better insecticides for the control of insects. Much educational work was also conducted, addresses being given at farmers and fruit-growers' meetings, demonstrations given in the spraying and dusting of orchard trees, and the publication of timely information.

Wolfville, N.S.—Investigations at this laboratory related particularly to the control of the European apple sucker by the Entomophthora fungus. Studies were also continued on the Empusa parasite of the green apple bug. Scouting work in connection with the spread of the apple sucker was directed mainly from this laboratory. The natural control of aphids attacking the apple was also investigated. Aphids were abundant in the neighbourhood and this afforded an opportunity for the obtaining of predators and parasites.

Kentville, N.S.—Studies in the control of wireworms affecting vegetables were conducted from this temporary field laboratory during 1923. Insect carriers of mosaic diseases to potatoes also received attention, together with the perfection of spraying and dusting machines and materials. The life-histories and control of many insects affecting vegetables are also being studied.

Fredericton, N.B.—Investigations relating to forest, fruit and other insects were conducted from this laboratory. A large amount of timber in the condition of fire-killed trees, windfalls and logs, is ruined each year by wood-boring insects and our officers have commenced an extensive study of this problem with a view to perfecting methods of preventing this form of injury. Additional studies of the larch sawfly which is again becoming abundant and threatens to kill the young crop of larch, were undertaken. An investigation to determine the condition of forest trees most attractive to the different species of insects, involving monthly cutting of different species of trees was commenced in 1923, near Fredericton, in co-operation with the Provincial Forestry Branch and the University of New Brunswick staff. The information obtained should aid us in perfecting

our methods of control. An extensive cutting operation was also conducted by our officers in co-operation with one of the lumber companies, to determine the value of recovering dying beetle infested balsams in preventing further similar injury to the area. On two areas representing different types of forest, detailed studies were made to determine the quantity of budworm-killed timber still valuable for lumber and pulp.

Insects injurious to the orchard and farm were abundant in New Brunswick in 1923. Remedies for tent caterpillars, fruit worm, apple maggot, fall webworm, codling moth, pear slug, flea beetles, aphids, plant bugs, cutworms, etc., were frequently requested. In many cases farms and orchards were visited by our officers and in some districts control demonstrations undertaken under com-

mercial conditions.

Hemmingford, Que.—The officer in charge of this laboratory has devoted considerable attention to the life-history and control of the apple maggot, which is one of the most important fruit insects occurring in Quebec province. A definite spray recommendation has been evolved for the control of this insect. Other studies in which excellent control measures have been developed, relate to the apple curculio, the plum curculio, the round-headed apple tree borer, the cigar and pistol case-bearers, etc. Considerable extension work was conducted among fruit growers, and timely articles published in local papers from time to time. In order to direct further attention to the work conducted from this laboratory, special exhibits were prepared for a number of the fall fairs, an officer being stationed with the exhibit to supply information desired. In addition to outbreaks of the insects mentioned above, other pests such as cutworms, white grubs, tent caterpillars, fall webworm, etc., were abundant and required attention.

Aylmer, Que.—As in previous years this field station has conducted investigations relating to important shade tree insects of Eastern Canada and to the biology of numerous species of injurious forest insects. Special studies in the control of destructive boring insects are being conducted. The relation of weather conditions to insect activities is receiving special attention. Monthly cuttings of different species of trees were made to determine the condition of the wood and bark most attractive to different boring insects. Forest insect material is sent to this laboratory from the forests of Quebec and Ontario for biological studies.

Vineland Station, Ont.—In the Niagara district of Ontario work on the grape-leaf-hopper was continued. With the information our officers now have, the quelling of an outbreak of this insect in one season is easily within the bounds of possibility. Further important progress has also been made in the control of the rose chafer, which insect within recent years has been an important enemy of grapes, cherries, etc. In co-operation with the St. Catharines, Ont., laboratory of plant pathology, a joint investigation on raspberry mosaic was incepted. The entomological phase of this investigation includes studies on the transmission of the disease through the agency of aphids and the other insects, etc. An extensive study of the codling moth was incepted, and further progress made in studies of the pear psylla, peach plant bugs, blackberry leaf-miner, European red mite, etc.

Strathroy, Ont.—This permanent laboratory serves as headquarters for all field work in the common field crop and vegetable insect studies of western Ontario, from which practical extension operations in the control of insect pests are developed. Furthermore, being situated in a mixed farming and dairying centre studies are being maintained on insects affecting forage crops and hay,

particular attention being directed to clover insects, hessian fly, white grubs, and chinch bug. The officer in charge of this laboratory has continued to assist in the inspection of imported nursery stock entering western Ontario.

Port Stanley, Ont.—This temporary laboratory is maintained especially for use in the European corn borer studies which are being undertaken in Elgin county, Ont., which at the present time represents the centre of infestation. This laboratory, however, serves as a general headquarters for all biological studies on this insect throughout Ontario having been established first in 1921.

St. Thomas, Ont.—This laboratory is devoted to the rearing of parasites of the European corn borer, and their colonization in areas in Ontario where infestations of the corn borer have been serious. The parasite studied and reared in 1923, is the species known as Habrobracon brevicornis. Breeding stock of this parasite, imported from Europe, was obtained from the United States Bureau of Entomology. As mentioned in another part of this report, 595,000 individuals of this parasite were reared at this laboratory and liberated in fields where the corn borer has been serious. Arrangements were also made to receive breeding stock of another important parasite of the corn borer in Europe, namely, Exoristes roborata. The Dominion Entomologist, while in western Ontario located a native parasite of the corn borer, also of the genus Habrobracon and material of this species has been under observation at the St. Thomas laboratory.

Treesbank, Man.—The decline of the grasshopper outbreaks in Manitoba, which have occurred in recent years, has permitted the extending of more time to the less spectacular but probably more important insect pest, the wheat-stem sawfly. This insect has spread to a very great extent across the Prairies of late years and it is receiving attention at this laboratory which is situated in the most severely infested area. Studies in insects affecting sunflowers, sweet clover, alfalfa and such crops which are of importance in mixed farming centres are also being undertaken. As time permits, observations are being continued on insects affecting live stock, and also on insects affecting shade trees.

Indian Head, Sask.—The shade trees in the prairie provinces have suffered severely from insect injuries during recent years. Large numbers of them are being planted each year on the prairie farms and we are making a special effort to aid in protecting them from insect injuries. A laboratory has been established at Indian Head to conduct needed investigations on the control of shade tree insects and to recommend effective methods for prevention and control of injuries. An extensive outbreak of forest tent caterpillars was the most important subject investigated and a circular on the subject has been written and distributed in the infested areas. More than thirty other species of important shade tree insects demanded more or less attention. The work of this laboratory is conducted in close co-operation with the Tree Planting Division of the Forestry Branch, Department of the Interior.

Saskatoon, Sask.—An effort is being made at this laboratory, using the excellent facilities offered through the association with the University of Saskatchewan, to study the soil faunal content in a series of fields under certain crop rotation practices. An analysis of the typical habitats of such soil-infesting insects as cutworms and wireworms, is also being made and it is hoped the results will indicate the most suitable crop rotations from a soil faunal point of view. In addition, life-history and control studies are being continued with many grain insects, such as chinch bugs, wheat stem sawflies, wireworms, and cutworms.

Lethbridge, Alta.—The most important insect studies being undertaken at this laboratory relate to grasshoppers and to the pale western cutworm. Both these insects have of recent years caused a great deal of damage and special

efforts have been made to study their parasites and other natural control factors so that some evidence of their future occurrences as pests may be obtained. The growth in the development of alfalfa and clover hay and seed growing in southern Alberta has necessitated instituting studies on insects affecting these crops. Special investigations were made on the seed chalcid and thrips. The vegetable growing interests of Alberta required the incepting of certain studies notably against the onion and cabbage maggots.

Banff, Alberta.—Investigations at this laboratory have related particularly to the various species of mosquitoes present in the Rocky Mountains National Park. Excellent control of these objectionable insects has been demonstrated and undoubtedly this has added very considerably the tourist traffic to this wonderful mountain park. In this work our officers have had the close co-operation of the Dominion Parks Branch of the Department of the Interior.

Vernon, B.C.—Investigations relating to many forest insects were conducted from this laboratory and special efforts were made to control the destructive pine bark beetle outbreaks of the yellow pine areas. Investigations were conducted to determine the relation of neglected slash to the development of bark beetle outbreaks. The results indicate that slash burning must continue to form an essential part of our bark beetle control work. As in previous years, our officers planned and supervised the extensive bark beetle control operations conducted by the Provincial Forest Branch. Forest insect surveys made by our officers in different parts of the Interior of the Province determined the areas where control work was required and plans were devised for the conducting of the control operating. Bark beetle investigations and the control operations include, particularly, injuries to yellow pine, lodgepole pine, western white pine and Douglas fir. Studies in many other important forest insects were conducted with particular reference to the biology of the injurious species.

At this laboratory, too, other officers were detailed for special investigations of insects attacking fruits and vegetables. The fruit-tree leaf-roller, an insect which is developing into a serious pest in the Okanagan Valley, was given special attention, and in co-operation with the provincial Horticultural Department, oil sprays have been tested, as a result of which definite recommendations have been made to the fruit growers. Other foliage-eating caterpillars have also

been studied, as well as species of thrips, mites, etc.

Victoria, B.C.—The work carried on from this laboratory consisted of a continuation of tests of strawberry root weevil barriers, control of holly infesting insects, control of leaf rollers, collection and rearing of bud moth material and parasites, and experiments with insect carriers of mosaic disease in potatoes. In all of this work important progress was made. The strawberry root weevil investigations have demonstrated to commercial powers the value of the barrier method of control.

Agassiz, B.C.—Studies of flea beetles, root maggots, etc., as well as insects attacking bush fruits, have occupied the attention of the officer in charge of this laboratory. Further data has also been secured on the satin moth, an European insect introduced into the province of British Columbia and one which is spreading gradually. Systematic and other studies of the various species of aphids of the province have also been undertaken. Assistance in the inspection and fumigation of imported nursery stock has also been given from this laboratory.

Nicola, B.C.—During 1923, a temporary field laboratory at this point devoted attention to the control of grasshoppers as they affect the range and stock conditions of the "dry interior" regions of the province. Ecological and life-history studies on many insects of the range were also conducted.

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# PUBLICATIONS

The following publications have been issued from the Entomological Branch during the year:—

#### BULLETINS

- No. 22.—Biological Notes on Parasites of the Prairie Cutworms. By E. H. Strickland.
- No. 23.—North American Cerambycid Larvae. By F. C. Craighead.
- No. 24.—Insects Affecting Live Stock. By S. Hadwen.

#### CIRCULARS

- No. 10.—The Fruit-tree Leaf-roller and its Control in British Columbia. By E. P. Venables.
- No. 12.—How to Foretell Outbreaks of the Pale Western Cutworm in the Prairie Provinces. (Revised.) By H. L. Seamans.
- No. 14.—The Beet Webworm. By E. H. Strikland and N. Criddle.
- No. 19.—The Control of Forest Tent Caterpillars in the Prairie Provinces. By J. J. deGryse.
- No. 21.—The Walnut Caterpillar and its Control. By C. B. Hutchings.
- No. 22.—Two Insects Affecting Cane Fruits in British Columbia. By W. Downes and R. Glendenning.

#### PAMPHLETS

- No. 6.—The Western Wheat-stem Sawfly and its Control. (Revised.) By N. Criddle.
- No. 14.—Directions for Collecting and Preserving Insects. (Revised.) By J. H. McDunnough.
- No. 31.—Aphids or Plant Lice. (Revised.) By W. A. Ross.
- No. 32.—Root Maggots and their Control. By R. C. Treherne.
- No. 33.—Wireworm Control. By R. C. Treherne.

In addition to the above department publications the officers of the Branch have contributed articles in the Agricultural Gazette of Canada, as well as in the entomological journals such as *The Canadian Entomologist*, transactions of various societies, etc. Many articles were also prepared by our entomologists for the agricultural and horticultural press.

# THE FRUIT BRANCH

# INSPECTION SERVICE

The inspection staff in 1923-24 was seventy-five as compared with seventyone in 1922-23, the slight increase being in temporary men to assist in additional work caused by the enforcement of the Root Vegetables Act, 1922. The
staff is employed primarily for inspectional work under the Fruit Act and
the Root Vegetables Act, but in addition give practical demonstrations in
approved methods of picking, packing, grading and loading for the various
domestic and foreign markets. They also endeavour to meet the increasing
demand for special inspections of fruits and vegetables at point of shipment
and in the distributing centres—producers, the trade and public carriers find-

ing it of very considerable value to be able to secure the services of the inspectors and the benefits derived from handling certified shipments. The inspector's impartial report is practically always accepted by shipper and consignee, and in most cases forms a satisfactory basis for settlement in connection with disputed lots.

In co-operation with the various Provincial Departments of Agriculture meetings were arranged during the winter months when our inspectors were able to assist at packing demonstrations and by giving information with respect to packing, grading and marketing. In many cases the inspectors acted as judges at exhibitions.

The increased demand for boxed apples in the markets of Eastern Canada and the United Kingdom has stimulated interest in box packing and our fruit packing and orchard specialist, together with those inspectors competent to give instruction in box packing, has done excellent work in giving practical instruc-

tion both to individual growers and at packing schools.

During the season of 1922 it was found that the tender fruit markets, particularly in Eastern Canada, were being glutted with fruit which arrived in poor condition, caused largely by improper packing and handling at point of shipment. This fruit was being marketed in competition with imported fruits packed under the best modern methods, and consequently sold at greatly reduced prices. It was, therefore, decided to engage the services of an expert in western methods of fruit packing to work in conjunction with the permanent packing and orchard specialist. Both experts devoted their whole time during the shipping season to demonstration work in the tender fruit districts of Ontario, and as a result marketing conditions and prices showed a material improvement. This work was later extended to include special instruction in apple box and crate making, box packing and warehouse management.

The assistance rendered the blueberry shippers and dealers in Quebec was continued last season, when two officers were stationed in the Lake St. John

district during the rush movement.

The inspectors in the districts affected, again co-operated with the Entomological Branch by being on the watch for violations of the European corn borer

quarantine.

The inspection of cooperage stock and barrel factories was vigourously prosecuted in order to ensure a supply of standard sized barrels for both apples and potatoes. Convictions were secured against three manufacturers of undersized barrels, a conviction also being secured in connection with the manufacture and use of undersized apple crates. Basket factories and fruit containers generally were systematically inspected, some 375 inspections being reported.

#### THE FRUIT ACT

This legislation, which is a consolidation of Part IX of the Inspection and Sale Act and amendments made in accordance with resolutions passed at the Dominion Fruit Conference of 1922, became effective June 13, 1923. It provides new grade designations and definitions for apples, crabapples and pears when packed in boxes, some slight changes in the definitions covering barrelled apples and the standardizing of additional packages. Throughout the past year educational work has been carried on by personal explanation, at public meetings and through press publicity to familiarize the trade with the new regulations, particularly in respect to the box packs.

The number of violations reported under the Fruit Act during the past year was 953, as compared with 1.280 in 1922-23. All violations were carefully

investigated, and in nineteen cases prosecution followed.

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The following table shows the number of lots of various kinds of fruits inspected and the number of packages inspected during the year ending March 31, 1924:—

Variety		Number of lots inspected	Number packages in lot	Number packages inspected
Apples	Boxes Baskets Packages	11,820 5,036 303 593 1,136 877 592 3,428 232 72	1,550,473 1,817,246 33,564 116,324 252,775 228,391 94,660 459,908 285,091 72	66, 473 72, 695 3, 280 7, 770 14, 034 10, 593 5, 375 58, 162 9, 420

# THE ROOT VEGETABLES ACT

Substantial progress has been made in the enforcement of the Root Vegetables Act, which has now been in effect for nearly two years. While there are minor points which require adjustment and possibly amendment, the past season's operations have confirmed the opinion of producers, shippers and dealers that the Act is progressive legislation and its enforcement of value in stabilizing

the industry.

With the exception of four temporary men appointed specially for work in the commercial potato districts, the enforcement of the Root Vegetables Act has been carried on by the fruit inspection staff, necessitating very little additional expenditure in enforcing the potato and onion grading regulations. Further educational work is still required to familiarize producers with these regulations, particularly in some of the large potato districts where fruit is not commercially grown and where our staff of inspectors is consequently small. The number of violations recorded under the Root Vegetables Act during the fiscal year 1923-24 was 1,315, with prosecutions following in ten cases, three of these being in connection with the manufacture of potato barrels of less than standard size.

The following statement shows the number of lots of potatoes and onions inspected and the number of packages inspected during the year ended March 31, 1924:—

	Total of Inspections	Number of packages in lot	Number of packages inspected
Potatoes (90 lb. bags)	3,170 65 110 1,609 58 585	714,439 14,090 22,783	36,995 2,318 1,958
Totals	5,597	873,697	47,452

# FRUIT SEASON, 1923

A season approximately two weeks later than normal in all the fruit-growing provinces with the exception of British Columbia followed a winter during which but little, if any, injury was done to the fruit plants, bushes and trees. The

blossom was heavy and there was every indication of a crop of most fruits slightly in excess of the abundant crop of 1922. Slight frosts and less favourable conditions later in the season however, reduced the crop prospects so that at harvesting time the total yield of practically all kinds of fluits was less than the year previous.

The total apple crop of the Dominion was 4,399,969 harrels, slightly less than that of 1922, when 5,048,405 barrels were produced and of 1920 when the crop totalled 5,828,632 barrels. The following table shows the comparison

between the crop of other fruits for 1922 and that of 1923.—

	1922	1923
Pears Plums and prozes Peaches. Apricots Cherries Strawberries Raspherries Other berries Grapes	461, 227 bush. 468, 438 577, 501 37, 706 202, 740 8, 678, 200 qts. 6, 271, 725 2, 837, 549 70, 308, 462 lbs.	227, 335 bush 348, 482 " 401, ( ) " 32,850 " 203,125 " 8,652,200 qts. 4,496,840 " 2,527,700 " 42,185,077 lbs.

It is estimated that the commercial crop of all fruits in 1923 had a whole-sale value of \$33,169,143.

Growing conditions in British Columbia were particularly favourable. All fruits bloomed freely and gave indication of a very satisfactory crop. In the Okanagan Valley the season was two weeks in advance of that of 1922. Early estimates of a crop of apples in excess of that of 1922 were fulfilled, final crop estimates being 3.700,000 boxes as compared with 3,082,000 boxes the previous year and 1,819,995 boxes in 1920. Summer apples were lighter, fall apples about equal, but winter apples considerably heavier, particularly such varieties as the Wagener, Rome Beauty, Spy, and Jonathan. The crop of pears, peaches, cherries, strawberries and raspberries was in excess of 1922, but the crop of plums, prunes and apricots, showed a slight decrease.

Although the season in Ontario was somewhat backward, early conditions were very favourable and there was a record showing a bloom on apples and a good showing on other fruits. The weather conditions however, during blossoming time were not favourable for a good set and resulted in the total apple crop being but 1.304.400 barrels as compared with 1.739,000 barrels the year previous and the 1920 crop of 3.257,483 barrels. Baldwins, Spies and Starks, however, were a heavy crop. The crop of other fruits such as peaches, pears, plums, cherries and berries showed a considerable drop from that of 1922.

The fruit trees in the Province of Quebec came through the winter in a very healthy condition, but although the bloom was heavy, the set was very light so that early indications did not promise a total crop of apples greater than 50 per cent of that of the year previous. Even these early inheaties were not maintained, as unfortunately during early July a very severe half storm visited the St. Hilaire and Rougemont districts and caused material damage to the crop. In some districts, and especially where ext in variety were not heavy in 1922, the total crop was leavier, but throughout the province the final yield was but 65.094 barrels as compared with 216 984 barrels in 1922 and 334,045 barrels in 1920.

In New Brunswick the season was considerably later than usual. The apple trees did not come into full blossom until the week of June St. Dudley, Ben Davis, Russets, Wealthy and McIntosh showed a full bloggard set for a full crop. Tent Caterpillars caused considerable damage but on the

whole the fruit was of good size and particularly clean. While the apple crop of 1920 totalled 130,876 barrels and in 1922 totalled 173,236 barrels that of 1923 packed only 69,292 barrels. The strawberry crop was estimated at 500,-000 quarts as compared with 672,000 quarts the year previous and raspberries

at 16,995 quarts as compared with 28,324 quarts in 1922.

All fruit trees and plants in Nova Scotia wintered well there being practically no indication of winter injury either from the cold or severe storms. In a few instances the limbs of trees were broken due to the weight carried while the snow was melting. The total damage from this cause however, was not serious. The season was approximately 10 days later than average, but the apple blossom was unusually abundant with practically all trees showing full. From early indications the crop was estimated at 10 per cent heavier than that of 1923, with Ben Davis, Golden Russets, Kings, Greenings, Spies and Blenheims, particularly heavy. The quality of the fruit was good, but the colour was not up to normal. Heavy wind storms in August followed by a severe storm early in October caused a very severe loss, so that the total crop when harvested was practically the same as that of the year previous of 1,821,064 barrels, as compared with 1,891,852 barrels in 1922 and 1,440,812 barrels in 1920.

The crop of strawberries, 135,000 quarts and of raspberries 36,000 quarts

was slightly in excess of that of 1922.

In spite of unusually heavy snow storms on Prince Edward Island the fruit trees suffered little damage and all trees and plants came through the winter in good condition. Of the small quantity of fruit produced in this province, apples, cherries and strawberries comprise the larger portion. According to the census of 1921, the crop of 1920 totalled approximately 50,000 barrels of apples, 2,400 bushels of cherries and 91,600 quart's of strawberries.

# EXPORT MARKETS

The Canadian Fruit Trade Commissioner in England rendered many exhaustive and very favourable reports covering the fruit market conditions in the principle markets in Great Britain and on the Continent. He also acted as the Canadian Representative on the Imperial Fruit Show Committee.

The export apple season of 1923 opened very satisfactorily; prices during September and October maintaining a level, that in view of general conditions of industrial depression, the considerable amount of unemployment, the resulting reduced purchasing power of a large proportion of the consuming public, and the fact that twice as many barrelled apples and three times as many boxed apples went forward during the period as compared with last year, was really remarkable. The important factor however, in the situation was the shortage of continental crops and the fact that England had possibly no more than one-third of a one hundred per cent crop.

During the month of November the quantity of apples exported was just about double that of the previous year and the reaction of the market to such heavy overseas supplies was naturally disastrous, prices dropped from 2s. to 3s. on both boxes and barrels, as compared with mid October values and 5s. to 8s. per barrel as compared with those of late September and early October. The barrel apple prices would not average higher than 20s. to 22s. for No. 1 and 12s. to 16s. for No. 3, while boxed apples fell below profit returning figures, Jonathans, Extra Fancy, only very occasionally making as high as 10s. and

usually only from 8/6 to 9/6.

The low prices prevailing on all markets discouraged shipments during December. Boxed apples particularly showed a considerable reduction. Bar-

relled apples nevertheless continued to be considerably in excss of those for the same period last year. The reduced quantities, together with the stimulating effect of Christmas trade activities reacted favourably on prices which showed a slight increase in barrelled apple values of from 1s. to 6s, in the maximum and from 3s. to 4s, in the minimum. There was also an improve-

ment in prices paid for British Columbia boxes from 1s. to 2s.

During January the arrivals were comparatively moderate, especially as regards boxes, which were somewhat less than during the same month of 1923, while barrels, although not overloading the market, greatly exceeded the quantities offered during the same period last year. The prices of all apples advanced over those of December from 2s. to 4s. for all grades. During February, the arrivals were heavy for the season, barrelled apples showing a considerable increase over those on the market during February last year, and boxed apples being nearly double the shipments in 1922.

The total shipments to April 30 of Canadian apples of the 1923 crop was 1,326.656 barrels and 568,545 boxes, as compared with 1,169,685 barrels and

340,685 boxes of the 1922 crop.

# FRUIT AND VEGETABLE CROP REPORTS

The Fruit and Vegetable Crop Reports were issued each month from June to October, inclusive, and a special potato crop report in November. Each report contained a summary of the crop prospects throughout the Dominion and a detailed report on the prospects in each of the producing sections of the Dominion, the United States and Europe. In addition there were notes on transportation matters and on fruit and vegetable insects, the latter being prepared by the Entomological Branch of the department. A large number of requests were received for this report and the mailing list was consequently increased during the year by over 800 names bringing the total list to slightly over 10,000.

TELEGRAPHIC MARKET REPORTS

During the year seventy-one Telegraphic Market Reports were issued from Ottawa, once every week except during the heavy fruit marketing season when they were issued twice weekly and simultaneously from Vancouver, Winnipeg and Ottawa. These reports contain quotations on all fruits and vegetables submitted to the Fruit Branch by telegraph from all the principal marketing centres throughout the Dominion. In the exporting season they also contain quotations on fruits forwarded by cable from the more important export markets. The mailing list for this report now contains approximately 4,500 names.

# EXHIBITIONS

With a view to encouraging the greater use of Canadian fruits and vegetables, a booth was placed at the following exhibitions: Brandon, Calgary, Edmonton, Saskatoon, Regina, Canadian National Toronto, Central Canada Ottawa, Royal Agricultural Show Toronto, and T. Eaton Company, Winnipeg.

An experienced demonstrator in household science gave daily demonstrations in the booth of various approved methods of canning and preparing

fruits and vegetables.

Booklets in which were printed a large number of recipes covering practical and simple methods of canning, preserving and storing fruits and vegetables were distributed to housewives.

According to reports received from the fruit and vegetable trade in the districts concerned, a very considerable amount of encouragement was given to the industries in this manner.

For the Imperial Fruit Show held in Manchester, England, from October 25 to November 5, 1923, the Fruit Branch collected and prepared an exhibit of the better varieties of export apples. This exhibit which was one of the major attractions at the Show proved to be of very material value in the advertising of Canadian grown fruit. The whole exhibit was in charge of a representative from the Fruit Branch, who also acted as the Canadian representative on a board of three judges for the British Empire section. The Canadian exhibits in the competitive sections, while not as numerous as in previous years, due to the early date of the exhibition and the unfavourable condition of the fruit growing season, were of very superior quality and attracted a considerable amount of attention and favourable comment from the public, the fruit growers and the fruit trade in Great Britain. It is worthy of note that in addition to the awards to the Canadian entries of one gold cup, two silver cups, fourteen gold medals and two silver medals, the premier prize of the show was awarded to an exhibit of McIntosh Red from British Columbia. This is the first time on record that a variety of apple other than the Cox Orange has been awarded the premier prize in the dessert class at a fruit show in Great Britain.

# BRITISH EMPIRE EXHIBITION

The Branch co-operated with the Canadian Exhibition Commissioner of the Department of Immgration and Colonization in securing apples for the British Empire Exhibition. In addition to locating orchards where fruit of exhibition quality was to be found, our expert packers assisted by the local inspectors selected, packed and shipped the apples secured in Ontario, Quebec and the Maritime Provinces, amounting in all to about 1,000 boxes.

# JONATHAN BREAKDOWN

Assistance was given the Experimental Farms Branch in British Columbia in connection with the special inquiry into the Jonathan rot. From September 15 to October 31 practically the whole time of one inspector was devoted to picking and packing Jonathans at Summerland. Kelowna, Okanagan Centre, Vernon and Salmon Arm twice weekly for the purpose of determining the effect of the maturity at time of packing on the development of the rot in storage.

#### THE CANADIAN HORTICULTURAL COUNCIL

The Canadian Horticultural Council, organized at the Dominion Fruit Conference, 1922, at the request of the horticultural and allied industries, continued to function in a manner most satisfactory to all the interests represented. A number of meetings, attended by representatives from the fruit and vegetable industries throughout the Dominion, were held, and questions and problems of vital importance to these industries discussed and adjusted. A large number of new varieties of horticultural trees, shrubs and plants from all sections of the Dominion were recorded and are now being tested with a view to registration. Complete information as to the work of the council may be obtained from their Annual Report published in 1923.

# TRANSPORTATION

Our supervisory and educational work in fruit transportation has proven increasingly important during the past year. Active measures by the railways towards reducing loss and damage claims have resulted encouragingly. The greatest success in claims prevention work has been in losses, while the damage proportion of the whole has correspondingly increased particularly in car-

loads. The claims problem is slowly resolving itself into one of carload damage, and the Transportation Division is co-operating with shippers and carriers towards correction of all loading and handling methods that can be considered responsible for depreciation or damage of these perishables in transit. A typical figure of success of claims prevention work is the ratio of claims paid to gross revenues on the Canadian National Railways in the past three years—1.4 per cent in 1921, .8 per cent in 1922 and .7 per cent in 1923. Shippers have freely admitted that the service rendered by the railway and express carriers in 1923 has been the most satisfactory on record, and we are hopeful that this same relative efficiency increase will prevail as both shippers and carriers continue their efforts to overcome damages and depreciation in transit. Improved methods of transportation are steadily extending the radius of distribution.

The refrigerated carload movement of tender fruits is recognized as the essential factor in the wide distribution necessary. The most modern refrigerator cars offer dependable transportation if correctly loaded and braced and kept fully iced en route. The onus does not rest solely on either the shipper or the carrier. Our instructional work is being continued towards still more general understanding among shippers of the principles involved, while experiments are continuing co-operatively with the carriers towards perfection of equipment and icing arrangements.

Shippers have asked that we include in experimental work of the coming season tests of ventilated instead of refrigerated carload movement of cherries. Humidity comparisons will be included in this test. Humidity comparisons

will be made also in different types of refrigerator cars.

The new berry box legalized by the Fruit Act, 1923, was tested last season and found to be an efficient carrier as well as an acceptable marketing package.

In the 1922-23 winter movement of Nova Scotia apples to Great Britain considerable frosting resulted, and at the suggestion of Annapolis Valley shippers a meeting was arranged last July between railway and steamship officials and the growers, when preventive measures were decided on for every step in transportation. A gratifying result is that the past winter's movement was carried out with practically no frost damage.

Experimental tests are now under way on a ventilating installation for the non-refrigerator equipment in express fruit service from producing districts, which it is expected will help to overcome the high temperatures which

have prevailed in field-warm loadings.

A new fruit shed opened in Bonaventure terminal, Montreal, last August greatly improved the handling and marketing facilities for daily arrivals. Handling at the Point St. Charles terminal had been a source of constant pro-

test, being too remote from the wholesale section of the city.

Strawberry growers in the vicinity of Sackville, N.B., are being assisted in improving their carloading methods. This district has the greatest commercial production of strawberries in the Maritime Provinces and profitable markets are available in the cities and summer resorts of Eastern Canada and the New England States. In recognition of the development of this traffic into carload movement, additional carload express rates and reduced minimum have been negotiated for the coming season.

On the boats collecting fruit and vegetable shipments from Okanagan Lake ports improvements are promised before this season opens for protection

frem boiler heat and to provide fanned fresh air through the cargo.

Experiments were conducted during the past winter in unheated refrigerator movement of apples from British Columbia to prairie markets and to Eastern Canada. Additional to the protection afforded by the insulated car

body the load was blanketed with straw or hay. These experiment's are directed towards avoidance of the over-maturity and quality depreciation that has so frequently resulted in heated carloads of apples loaded from storage at practically full maturity, as well as towards lower transportation costs. A continuation of these loading tests will be carried out the coming winter.

During the past winter the express companies of Canada have applied to the Board of Railway Commissioners for upward revision of express rates. Our Transportation Division has assisted the organized shippers in the different districts of production to set before the board their actual position with the relation of transportation costs to their marketing problem. It was considered reasonable that the carriers should be asked to recognize the value of transportation rather than proportionate cost of service, in establishing their rates on these commodities of such relatively low ton-value.

An effort was made to have preferential freight rates introduced for the encouragement of wider and more general inter-district and interprevincial exchange of certified seed potatoes. We are hopeful that before another season the railways will co-operatively assist in this means towards improvement in

quality and quantity of production.

# THE PUBLICATIONS BRANCH

Method of Distribution.—The publications of the department are prepared and issued by the respective branches. The Publications Branch functions as the distributing agency. Notification of the issue of a publication is sent by the head of the originating branch to the Director of Publicity, together with any special instructions that may be necessary as to distribution.

The general practice is to distribute to applicants and to what is termed the "special general" list. This is a standing list which includes agricultural officials, public libraries, members of Parliament and provincial legislatures, the press, institutions, and exchanges. The list contains 2.485 English and 535

French names.

To the policy of distribution to applicants, an exception is made in two instances, namely, in the case of "Seasonable Hints," issued three times a year by the Experimental Farms Branch, and the interim reports of the Experimental Farms and Stations. "Seasonable Hints" is sent to the general mailing list and supplementary lists, comprising 273,173 names. It is also sent in small bulk lots to banking institutions and elevator companies for distribution to farmer patrons.

The second exception is in connection with the interim reports of the branch Experimental Farms and Stations. These are distributed to the names on that section of the general mailing list which covers the province or the

portion of the province in which the Farm or Station is located.

The publications of the department as issued are announced in two ways. First, along with each copy of "Seasonable Hints" is enclosed a supplementary list of new publications. By this means, all whose names appear on the general list are kept advised of new issues, and of the fact that copies are obtainable on request. Attention is also directed to the regular list of publications, which is issued annually. By this means upwards of 270,000 persons, mostly farmers, are kept informed as to the publications available. The second method of announcement is by means of notices and short articles sent to the press. These are prepared in such a way as to indicate the usefulness and value of the publications and to stimulate demand for them. Many of the weekly papers throughout the country avail themselves of this means of giving service to their rural subscribers.

Distribution.—The following comparative statement shows the total distribution of publications by the branch in 1922-23 and 1923-24, respectively.

1	922-23	1923-24
Reports	173,566	155,521
	39,068	17,923
"Seasonable Hints"	774,910	921, 255
Pamphlets and Circulars, etc	_	1,329,960
"The Agricultural Gazette"	T	51,975
2,	663,616	2,476,634

Included in the above statement under Pamphlets and Circulars are the following multigraphed or printed periodicals, the distribution of which is performed on behalf of the originating Branch, together with the maintenance of the address lists.

Title	Period	Originating Branch
Dairy Market Report Egg and Poultry Market Report Dairy News Letter Entomological News Letter Fruit Crop Report Seed, Feed and Fertilizer Markets Library Accessions, Descriptive list of	Monthly Monthly Monthly (May-Oct.) Bi-weekly (printed)	Dairy Branch Live Stock Branch Dairy Branch Entomological Branch Fruit Branch Seed Branch International Institute Branch

The number of envelopes addressed for Seasonable Hints shows approximately the distribution through the mails of that periodical by the Publications Branch. This is given in the following table, which includes March, 1923, for comparison with March, 1924, showing a gain in that period of 10,395 copies:—

	English	French	Total
March, 1923.		45,810	262,778
July, 1923.		49,143	266,633
November, 1923.		50,272	270,411
March, 1924.		51,610	273,173

The following periodicals were multigraphed or mimeographed by the Publications Branch but, with the exception of the Entomological News Letter, were distributed by the originating branch, namely:—

Title	Period	Originating Branch
Entomological News Letter		Entomological Branch Entomological Branch Entomological Branch

Duplicating.—In addition to the periodicals appearing in the above table, the duplicating work includes circulars, form letters, etc., as well as special articles for distribution to the press, comprising in all, 171,806 sheets, compared with 172,304 sheets in 1922-23.

The Agricultural Gazette of Canada.—This bi-monthly periodical, which is compiled and edited by the Publications Branch, is sent to officials, teachers of agriculture, senators, members of parliament, Dominion and Provincial, agricultural representatives, secretaries and presidents of agricultural associations, the press, libraries, exchanges, consuls, and to 267 paid subscribers. The distribution list comprises 6,883 English and 1,518 French names.

The publication of the Agricultural Gazette was discontinued at the con-

clusion of the fiscal year.

Seed, Feed and Fertilizer Markets Report.—The issuing of this bi-weekly report in English and French was begun by the Seed Branch during the year, and its distribution to the free list and to paid subscribers was undertaken.

Branch Lists.—The Branch lists, sixty in number, were maintained for various branches of the department, and total 39,460 English and 5,986 French names. During the year, the Entomological Branch lists were revised and six new ones added. The Poultry Division added three new lists, and the Dairy Branch revised the list of cheese and butter factories.

Additions and Revisions.—During the year 17,048 names were removed from the various mailing lists, principally through returned envelopes; 32,765 names were added, and 2,821 changes of address were made.

The general mailing list is augmented by placing thereon the names of all new applicants for publications, as well as names secured at the leading exhibi-

tions, and in other ways.

Cards of application were sent during the year to all box holders on rural routes in the postal divisions of Charlottetown, Halifax, St. John, Quebec, Sherbrooke and Montreal. Out of 61,572 cards sent 6,596 or 11 per cent were returned.

Machine Addressing.—The number of envelopes addressed from lists by automatic machinery was 2,190,843 compared with 1,567,582 in the year previous.

The classified statement follows:-

Machine addressed—Bulletins, etc	1,302,619 686,331	
Press Notices, Circulars	39,170	
Addressing for branches	58,758	
Lists of addresses		2,086,878
Total		2,225,897

Hand Addressing.—All publications mailed in response to individual request are hand addressed by typewriter. The number of envelopes so addressed was 123,347 compared with 126,670 in 1922-23.

Press Articles.—The press articles distributed by the branch are issued with the object of giving publicity to the work of the department, and of stimulating demand for publications. They comprise items of news, notices of publications, and short articles conveying information of interest and value to the farming community. They are prepared chiefly by the branch, and are despatched to various sections of the Canadian press—dailies, weeklies, and agricultural journals. The total number of press articles issued during the year was 481 compared with 578 in 1922-23.

Special Publications.—Three illustrated booklets, intended for distribution at the British Empire Exhibition, were compiled by the branch during the year. These were "Canadian Dairying", "Canadian Wheat and Wheat Flour", and "Canadian Live Stock and Meat Industries", and the preparaiton of a fourth, "Canadian Fruit, Vegetables and Honey" was begun. The first named was also made use of at the World's Dairy Congress and National Dairy Show held in the United States in the autumn of 1923.

Change of Quarters.—The premises at 72 Queen street being required by another Department of the Service, new quarters were assigned to the Publications Branch in the Transportation building, and were occupied early in 1924.

Publications Issued.—A list is appended of the printed publications issued by the department during the year, showing the title, classification, the number issued, and the number received and distributed by the branch.

# PUBLICATIONS ISSUED BY DEPARTMENT AND DISTRIBUTION MADE BY PUBLICATIONS BRANCH IN 1923-24

Title	Edition	Number received by Pub- lications Branch	Number distributed by Publications Branch
Canadian Seed Growers' Association, Report, 1922–23	500	100 5,000	2,236
Dairy and Cold Storage Branch— Dairying in New Zealand and Australia, Bull. No. 34, N.S	40,000	39,296	27,881
Milk, Cream and Dairy By-Products, Testing of by Means of the Babcock Test, Bull. No. 14, N.S.	2,000	1,800	1,270
Cream for Buttermaking, Care of, Pamp. No. 37, N.S	25,000	25,000	5,545
Ice, Simple Methods for the Storage of, Pamp. No. 2, N.S	30,000	29,400	11,615
Milk, Why and How to Use, Pamp. No. 36, N.S	25,000	15,400	11,200
Cream, Causes of Variation in the Percentage of Fat, in Hand	E 000	1.500	1 075
Vat and Churning Numbers on Cheese and Butter Boxes,	5,000	4,500	1,375
Dairy Industry Act and Regulations, A.O.R., No. 13	8,000 15,000	$\frac{200}{14,850}$	56 4,282
Dairy Freduce Act and Regulations, A.O.R., No. 6	10,000	3,500	1,505
Entomological Branch— Cutworms, Biological Notes, Parasites of the Prairie, Bull.			
No. 26, N.S.	2,000	1,650	78
Insects Affecting Live Stock, Bull. No. 29, N.S	17,000	14,000	2,930
Aphids or Plant Lice, Pamp. No. 31, N.S.	5,000	4,800	
Root Maggot and their Control, Pamp. No. 32, N.S	13,000	9,000	6,080
Sawfly, Western Wheat Stem, Pamp. No. 6, N.S	8,000	6,650	6,350
Beet Webworm, Cir. No. 14, N.S	7,000	6,000	2,302
Cutworms, How to Foretell Outbreaks of the Pale Western, Cir. No. 12, N.S.	5,000	4,950	270
Tent Caterpillars, Control of Forest in the Prairie Provinces, Cir. No. 19, N.S.	5,000	3,500	1,683
Destructive Insects and Pests Act and Reg., A.O.R., No. 8	13,000	10,400	8,395
Experimental Farm's Branch—			
Agassiz, B.C., Experimental Farm, Interim Report, 1922	13,200	10,200	3,296
Animal Husbandry Division, Interim Report, 1922	19,000	17,500	9,373
Bee Division, Interim Report, 1922	13,000	9,000	7,107 2,582
Brandon Experimental Farm, Man., Interim Report, 1923	7.500	6,200	6,189
Cap Rouge Experimental Station, Que., Interim Report, 1922.	19,000	18,000	
Cereal Division, Interim Report, 1922	12,500	10,000	7,132
Chemistry Division, Interim Report, 1922	13,000		
Charlottetown, P.E.I., Experimental Station, Interim Report,	9,100	6,600	6,107
Director, Dominion Experimental Farm, Interim Report,	3,100	0,000	0, 101
1922-23.	20,000	19,806	10,269
Economic Fibre Division, Interim Report, 1921-22	6,000	4,500	3,909
Field Husbandry, Division, Interim Report, 1922	26,000	23,000	6,460
Forage Plants Division, Interim Report, 1922	11,500	9,000 7,500	7,096
Fredericton, N.B., Experimental Station, Interim Report, 1922 Horticultural Division, Interim Report, 1922	9,500	13,000	1,968 6,274
Illustration Stations Division, Western Canada, Interim Report, 1922.	16,000	14,900	7,267
Illustration Stations Division, Eastern Canada, Interim Re-	01 000	10.50	F 000
Inversera B.C. Ernerimental Station Interim Depart 1999	21,000	19,500	5,662
Invermere, B.C., Experimental Station, Interim Report, 1922   Kapuskasing, Ont., Experimental Station, Interim Report, 1922	11,000	8,900 8,750	5,551 $3,005$
Lacombe, Alta., Experimental Station, Interim Report, 1922.	19,000	14,505	13,832
Kentville, N.S., Experimental Station, Interim Report, 1922	9,000	9,800	3,830
Lennoxville, Que., Experimental Station, Interim Report, 1922	21,000	16,635	13,345
Lethbridge, Alta., Experimental Station, Interim Report, 1922	17,000	15,025	14,244
Morden, Man., Experimental Station, Interim Report, 1922 Nappan, N.S., Experimental Farm, Interim Report, 1922	10,000	8,000 8,800	7,950 3,081
Poultry Division, Interim Report, 1922	21,000	14,815	5,629
Rosthern, Sask., Experimental Station, Interim Report, 1922.  Ste. Anne de la Pocatiere, Que., Experimental Station, Interim	11,000	8,000	4,110
Report, 1922	7,000	6,606	3.186
Scott, Sask., Experimental Station, Interim Report, 1922	12,500	10,400	10,095
Sidney, B.C., Experimental Station, Interim Report, 1922	5,000	3,000	2,703

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# PUBLICATIONS ISSUED BY DEPARTMENT AND DISTRIBUTION MADE BY PUBLICATIONS BRANCH IN 1923-24

Title	Edition	Number received by Publications Branch	Number distributed by Publications Branch
Experimental Farms Branch—Concluded Summerland, B.C., Experimental Station, Interim Report, 1922.	11,000	9,550	2,776
Sub-Stations—Beaverlodge, Alta.— Fort Vermilion, Alta.; Grouard, Alta.; Fort Smith, N.W.T.; Fort Resolution, N.W.T.; Swede Creek,	9,000	6 000	
Swift Current, Sask., Experimental Station, Interim Report, 1922		6,000	3,480
Tobacco Division, Interim Report, 1922.  Bees and How to Keep Them, Bull. No. 33, N.S.  Cranberry Industry and its Possibilities in Canada, Bull.	7,500 16,000 35,000	6,500 13,000 20,040	2,516
No. 19, N.S	16,000	5,000	1,302 350
Farm Feeds, Bull. No. 24, N.S. Hardy Roses, Bull. No. 17, N.S.	$\frac{3,900}{26,000}$	1,500 26,000	
Medicinal Plants, Bull. No. 36, N.S.	5,000 35,000	3,500 28,000	
Orchard Practice, Modern, Bull. No. 18, N.S	4,000	3,000	1
Poultry Produce for Market, Preparing, Bull. No. 20, N.S	10,000	9,000	
Rabbits, Bull. No. 28, N.S	35,000	29,000	13,284
N.S	6,000	6,000	
Soil Fertility, Bull. No. 23, N.S. Soils, Western Prairie, Bull. No. 22, N.S. Beef Cattle, How Should Canada Export? Pamp. No. 39,	7,000 17,000	7,000 17,000	
N.S	2,500	1,500	1,121
Index to Seasonable Hints, Complete, Pamp. Misc	15,000 5,000	11,000 2,500	2,497 1,030
Seasonable Hints, Periodical.  Silage and Silo Construction for the Maritime Provinces,	1,144,000	928, 125	917, 175
Pamp. No. 35, N.S	17,000 1,500	$14,700 \\ 1,200$	7,312
Plums, Disease of and Their Control, Cir. No. 15, N.S	8,000	1,050	
Fruit Branch-			
Preservation of Fruit and Vegetables, Canning, Storing and	20,000	1,700	1,700
Apples, Size, Colour and Minimums for, Cir. No. 16, N.S	20,000		
Fruit and Vegetables Recipes, Cir. No. 17, N.S	_	19.050	110
Fruit Act and Regulations, A.O.R., No. 7	43,000	18,050	1,656
Health of Animals Branch— Veterinary Director General, Report, 1922	7,000	3,150	3,082
Fox Ranching in Canada, Bull. No. 12, N.S	13,000	9,000	2,246
Mange in Horses and Cattle, Bull. No. 31, N.S	9,000	3,500	240
Other Animals, Cir. No. 3, N.S	10,000	7,000	675
Live Stock Branch-			
Canadian Record of Performance, Pure Bred Dairy Cattle, Report No. 15	13.750	13,750	11,172
Canadian Record of Performance, Sec. "A", Pure Bred Poul-			
Commercial Live Stock Marketed in Canada, Origin and	15,000	50	25
Quality, Report No. 3	5,000	2,700	2,545
Poultry Produce, Co-Operation in Marketing, Bull. No. 25, N.S.	10,000	9,000	5,619
Bacon Hog and Hog Grading, Handbook on the, Pamp. No. 40, N.S.	70,000	10,000	200
Live Stock Markets and Meat Trade, Situation, Annual Re-	5,000	2,000	2,000
Live Stock Shipper's Guide, Pamp. No. 38, N.S	65,000	24	15
Eggs, Standardized Grades of, Leaf. No. 6	10,000	5,000 16,985	2,573 10,547
Eggs, Grading and Marking of, Reg. Respecting, A.O.R., 1923 Eggs, Commercial and Standard Grades of, Their Definition	50,000		
and Purpose in Culinary Practice, Poster, Misc	50,000	2,250	
Federal Assistance to Hog Breeding, Booklet  Federal Assistance to Horse Breeding, Booklet	15,000		FWW.

SESSIONAL PAPER No. 16

# PUBLICATIONS ISSUED BY DEPARTMENT AND DISTRIBUTION MADE BY PUBLICATIONS BRANCH IN 1923-24

Title	Edition	Number received by Pub- cations Branch	Number distributed by Publications Branch
Live Stock Branch—Concluded Bull Loaning Policy, Booklet	15,000 3,000 50,000 10,000 100,000 60,000		
Publications Branch— Agricultural Gazette of Canada, The, Periodical Canadian Dairying, Booklet, B. E. Exhibition Canadian Wheat and Wheat Flour, Booklet, B. E. Exhibition. List of Publications, Pamp. No. 42, N.S Maple Sugar Industry in Canada, Bull. No. 30, N.S	54,400 59,500 50,000 30,000 10,000	54,400 5,850 250 30,000 10,000	51,975 4,783 17 3,025 645
Seed Branch— Fertilizers Samples, 1922-23, Pamp. No. 41, N.S	9,500 7,500	3,400 30,000 5,000 3,000 24,200	242 29,076 3,533 315 16,220

# THE INTERNATIONAL INSTITUTE OF AGRICULTURE

At the Convention of 1905 the number of Governments which adhered to the International Institute of Agriculture was forty; this year the number has risen to sixty-two. The following are the only independent States that have not as yet adhered to the Convention: In Europe, the Kingdom of Albania (800,000 inhabitants), the Republic of Andorra (5,231), the Principality of Monaco (19,121), the Principality of Lichtenstein (9,900); in America, the Republic of Bolivia (2,265,000), Honduras (554,000), Panama (350,000), San Domingo (700,000), Venezuela (2,750,000); in Africa, the Republic of Liberia (1,500,000); in Asia, the Sultanate of Oman (500,000), Afghanistan (6,000,000), the State of Bhutan (250,000); the Kingdom of Siam (6,500,000). That is to say, of the total population of the globe, estimated at 1,800,000,000 inhabitants, not many more than 27,000,000 belong to independent States not yet adhering to the International Institute of Agriculture.

The management of the Institute is vested in the General Assembly and the Permanent Committee. The Assembly meets every two years at the seat of the Institute to consider the work and expenditure during the two previous years, and to determine the programme of work and vote credits for the two ensuing years. The next Assembly will be held in May next, when Canada is to be represented by Sir Thomas Elliott, Bart., K.C.B., the Delegate on the Permanent Committee for Great Britain, also the Acting Delegate on the Permanent Committee for Canada and the other British Dominions. The Permanent Committee comprising the permanent or resident delegates of the adhering countries who form the Directing Board, is entrusted with the function of seeing that the programme laid down by the General Assembly is carried out as completely and efficiently as circumstances permit. Some of the reports prepared by members of the Permanent Committee during the year mark important

departures in the policy and activities of the Institute.

The contributions of the adhering States are regulated according to the particular one of the five groups in which each adheres; those adhering in the first group having sixteen units of contribution to pay and five votes, and those adhering in the fifth group having only one unit of contribution to pay and a single vote. Fifteen countries adhere to the first group, among them Great Britain, who, at the present rate of exchange, contributes from \$17,000 to \$18,000. Canada, adhering in the second group, pays one-half this sum. At a rate of exchange slightly above the present rate, conceding a value of five cents to the Italian lira, the total contributions at present assessed against the adhering governments is only slightly in excess of the total sum which has been spent in each of the last two years, viz., \$165,000. Of this amount the King of Italy contributes regularly 300,000 liras annually: \$60,000 at the normal rate of exchange, or \$15,000 at the present rate. The performance of the very many important services is rendered possible only because of the extreme economy practised by the Permanent Committee. During the war the reserve fund, which had grown to something over \$400,000, had, a couple of years ago, almost completely disappeared. A reserve is once more beginning to accumulate, chiefly because of the payment of arrears by some of the central governments that had become impoverished during the war.

Of the numerous objects with which the Institute deals it had until a couple of years ago dealt chiefly with the first, namely, "to collect, study and publish as promptly as possible statistical, technical, or economic information concerning farming, vegetable and animal products, the commerce in agricultural products, and the prices prevailing in the various markets." In the reports of the Permanent Committee for the General Assembly of 1924 the Institute is devoting more attention to another of its objects, namely, to "submit to the approval of the Governments, if there is occasion for it, measures for the protection of the common interests of farmers and for improvement of their conditions after having utilized all the necessary sources of information, such as the wishes expressed by international or other congresses, or by congresses of science applied to agriculture, or agricultural academies, learned bodies, etc."

The latter cause of the Convention of 1905 grants to the Institute extensive powers in dealing with agricultural problems of the most varied nature, as will appear from the further reference to them in this report. Its success in dealing with the world's crop statistics during and immediately after the war, won important recognition from the Genoa Economic Conference of the Allied and Other Powers, when the Institute was formally entrusted with furnishing for the League of Nations all the economic information which the latter might require in connection with the world's agriculture. A protest launched by the General Assembly of the Institute in 1920 against the action of the International Bureau of the League in proposing in its programme an eight-hour day for agricultural labour, raised the question of the jurisdiction of the Institute in matters of agricultural labour. The question was referred for adjudication to The Hague tribunal of the League, with the result that a mixed Committee of the League and of the Institute was recently formed to deal with such questions in the future.

When the building of the Institute was in the course of this year extended, much additional space was reserved for the use of the Institute Library, now consisting of over 100,000 bound and unbound volumes, and for the periodical room attached to it. There was a lack of funds to furnish the equipment needed for the new quarters. A donation of 50,000 liras was generously placed at the disposal of the Institute for the purpose by D. Roffredo Caetani, Prince of Basoiano. This is in response to a suggestion recorded at one of the General Assemblies, that donations would be gratefully received. One of the first to respond was Mons, as Vilmorin, of Paris, the famous scientist and agricultural

experimentalist. In the spring of this year when the Italian Commission for the Encouragement of the Cultivation of Citrus Fruits dissolved its organization it had in its treasury from the Italian State the sum of 100,000 liras to dispose of. The Commission created a fund having for its object the distribution of premiums for research work and scientific studies in connection with the cultivation of citrus fruits, and the administration of this fund was entrusted to the Institute.

During the year the Permanent Committee tendered a reception to Their Majesties the King and Queen of Spain, accompanied by Their Majesties the King and Queen of Italy. Another distinguished visitor was the ex-Minister of Agriculture for Great Britain, Sir Arthur Griffiths-Boscawen.

Recognizing the paramount importance in all countries of milk and milk products the Institute was particularly active during the year in preparing a scheme for an effective international information service which would include the production of and trade in milk in its various forms, as well as butter and cheese (hard and soft varieties). As a sound basis for the service it is hoped that in future censuses and annual statistics of the various governments care will be taken to classify separately the females which produce milk for human consumption as distinguished from those whose milk serves only for the rearing of calves. The proportion of cows producing milk for human consumption to the whole number of milk-producing females varies widely, the proportion in France being only 70 per cent. A scheme had already been outlined in 1914 and had been referred to by the General Assembly of 1922. The difficulties confronting the Institute in its present undertaking arise chiefly from the serious lack of statistics in the majority of countries and from the incomplete and noncomparable statistics in other countries. The Institute finds this problem in the same state of chaos in which it found the world's crop statistics when it set out in 1908 to urge the governments without a statistical service to organize one, and the governments with an inadequate service to re-organize it so as to permit of comparisons between uniformly classified products. Once more the diversity of language, of standards of quality, weights, measures and currencies has to be met and surmounted. The Institute's decision now to proceed energetically with the work was to some extent influenced by the following resolutions, the first being that of the International Agricultural Congress at Paris in May, and the other the International Live Stock Congress at The Hague in August, 1923. Paris Congress: "Considering the role which has been vested in the Institute and the achievements which it has already accomplished, Resolved that there be organized, in accord with the International Institute of Agriculture, a permanent International Live Stock Bureau, having for its object to continue to study the questions presented at this Congress (questions of breeding, the keeping of herd books, the re-organization of methods of selection, notably in the line of milk producers, etc.), and to work out their realization." The Congress, moreover, favours an understanding between the different States to fix a common unit of measure of the alimentary value of different feeds and to arrive at a unification of methods in rationing. The Hague Congress: "The Congress, appreciating the work which has already been accomplished by the International Institute of Agriculture, and considering the practical results obtained in the line of statistics on the trade in animal products, milk control, and the breeding of domestic animals, requests the Institute to continue to extend its work along these lines."

The Institute's present report refers to direct enumeration of quantities of milk by applying to individual farmers as being so expensive that it is resorted to collect them only at decennial censuses and by a small number of governments. At the inception of the proposed service the Institute will rely more on securing the total production of a country on the basis of the number of milk

producing animals and on an average annual per capita production; or again on the basis of a knowledge of the data relating to a part only of the production, such for instance as the quantities of milk delivered to co-operative dairies and made into butter, cheese and other milk products. Statistics based on such criteria, although at first lacking absolute reliability, will be of value, and can at once be supplied annually by a large number of important countries. To begin with, the service will be furnished annually, but will be more frequent as soon as governments, through improving their statistical organizations, make this possible. The Institute will have an easy task in dealing with the world's trade in dairy products because imports and exports are dealt with in the returns of the Customs Departments. There exists a difficulty in the diversity of classification of products. The Institute for the present will have to rely chiefly on the simple classification proposed by the Brussels Convention of 1913, which provides for data under three heads-milk, butter and cheese-because the actual statistical data of the adhering countries could be easily brought into these three classifications, although eventually the aim would be to secure more detailed information on other milk products.

Mr. Anders Fjelstad, Delegate for Norway on the Permanent Committee, in the report to which reference has just been made furnishes a lengthy statistical statement of the world's position as to numbers of milk cows and the trade in milk and milk products, from which it can be appreciated how great are the difficulties that have to be surmounted for an efficient international service. Comparison in numbers of cows is made between the year 1913 and each of the years 1918 to 1922; the trade figures cover all the years from 1909 to 1922.

Dr. Asher Hobson, Delegate for the United States on the Permanent Committee, introduced in his report the subject of a universal classification for cotton. The United States, he states, has established a national classification for cotton, as well as for the major portion of other agricultural products. (The Reporter might have applied the latter statement also to Canada). An international classification is now expedient. Ten years ago in the United States that question was from the national point of view about in the position it is to-day from the international point of view. Hence, at his instance a resolution was adopted by the Permanent Committee, recognizing that all the countries interested should establish a universal classification of the type qualities of cotton in order to arrive at a uniform system of classification, such as the Institute has been endeavouring to realize for other agricultural products, in order thus to promote and facilitate international trade in agricultural products. The Institute is to stress to the governments interested the advantages of a universal classification for cotton, securing the views of the producers, the manufacturers and commercial associations, as well as of the consumers, so as to form a sound basis for further future action.

The Vice-President of the Institute, Mr. Louis Dop, presented another series of his important reports on agricultural meteorology, which reviews the world's activities on the subject. His recommendations for future action are based largely on the resolutions of the Conference of meteorological directors assembled at Utrecht in September, 1923. The International Committee on Agricultural Meteorology is to meet at Rome in May to formulate their views as experts on the various recommendations, and the International Institute at it's General Assembly is to formulate its decision and appeal to the various governments to invite their Meteorological Stations to co-operate along the lines of co-ordination of effort, systematization, centralization and publication of all the questions in their relations to agricultural products. Particular mention is made of Canadian collaboration with the Institute in the way of contributing valuable studies of the Canadian Meteorological Station.

The report of Dr. Asher Hobson on agricultural statistics is the basis for the following recommendations of the Permanent Committee (summarily expressed): That arrangements be made to ensure the rapid collection and transmission of unofficial as well as official information, the permission of the governments for transmission of unofficial information having been previously obtained. That the governments continue their efforts to amplify their statistical services so as to embrace the information concerning the new data (re cotton and dairy products) which the Institute desires. That the telegraphic service should be ultimately developed in the measure justified by the extension given by the adhering governments to their statistical services. That greater attention should be given to the preparation of monographs and special studies on methods of statistics as applied to agriculture. The report stresses the usefulness of a genereal census by all the adhering countries at the same date 1930-31 on a uniform plan. It stresses the importance of engaging the adhering governments to follow out these various recommendations and to conduct a well considered study as a basis and preparation of a programme which will be submitted to an international conference of experts in 1926.

The lengthy report of Dr. Valentino Dore, Chief of the Institute's Statistical Service, presents tables of striking importance showing the progressive improvement of the Institute's services even in the last three years, 1921-23, and showing the increased number of countries that have perfected their systems of statistics so as to furnish the data in the manner and with the promptness desired for the various products. The results of these improvements and of the more important ones which the Institute has brought about from the beginning of its work fifteen years ago in the way of available statistics, have gradually come to be regarded by the agricultural and other press of North America as common property. Sir Thomas Elliott is to present the following proposals of the

British Government:-

1. That in view of the provisions of Article 9 (b) of the Convention of 7th June, 1905, the Institute should be regarded as the seat and centre of all voluntary international action for the development of agriculture.

- 2. That international organizations concerned with agriculture or desirous of obtaining the support of agriculturists should be invited to place themselves in communication with the Institute with a view to secure the co-ordination of the arrangements to be made with regard to—
  - (a) the dates and places of their meetings,
  - (b) the publication of their resolutions, proces-verbaux and reports,
  - (c) the constitution of their permanent bureaux, if any, and
  - (d) any other matters likely to be of interest to agriculturists generally.
- 3. That the adhering Governments be invited to take the foregoing resolutions into their consideration and to adopt such measures as they may think desirable in order to give effect to them.

A report of the French Government concludes with the following recommendations:—

That the VIIth General Assembly of the International Institute of Agriculture:-

- 1. Should request the adhering States to establish among Agricultural Associations and Societies an active propaganda for the encouragement among farmers of the idea of agricultural progress, which is indissolubly connected with peaceful development in international relations.
- 2. Should instruct the Permanent Committee to enter into communication with the various Associations in order, in agreement with them, to discover the best practical methods for influencing public opinion throughout the world, basing this propaganda on the necessity for the order, tranquility and peace of the agricultural population in each country.

The United States Government is to introduce the resolution "that consideration be given to the admittance of agricultural and other associations as

associate members of the Institute." Madam Olivia Rossetti Agresti, Secretary of the late David Lubin, has been an ardent promoter of this recommendation. She states (January, 1924) that "the original intention of the founder of the Institute was to establish a World Chamber of Agriculture to which the voluntary agricultural associations would appoint their representatives. This would have formed an international advisory body for promoting the intereests of agriculture, more especially in the field of economics."

Quite apart from the decisions which these various Institute reports seek to bring about, the value of the ascertained facts and information therein contained, and not heretofore assembled in any other single series of publications,

should not be under-estimated.

Of the \$15,000 voted by the Canadian Parliament for the International Institute of Agriculture, approximately \$9,500 are for the direct contributions and about \$5,500 are for the maintenance of the Canadian office. The greater part of the latter fund is for the acquisition of books, periodicals and stationery for the Institute Library. The distance from Ottawa to the headquarters of the Institute requires, for an exchange of correspondence, from 25 to 30 days, hence the expediency of the creation in 1910 of the Canadian office, an outstanding function of which is to reproduce in Canada the essential features of the Institute's work in Rome, to adapt it, in so far as possible, to Canadian needs, and ensure that its decisions shall exert a direct influence on Canadian agriculture. This it has been heretofore enabled to do in a certain measure through its communications to the Agricultural Gazette and the agricultural press, and through its library.

Apart from the Institute Branch's allotted task to disseminate useful information emanating from the Institute, there has been a great deal of advertising abroad of Canada, her products, her agricultural achievements, and of her leading experts through the Institute's various monthly and annual publications. A considerable portion of space devoted to Canada has been secured through the efforts of the Branch, whose duty it is to keep the Institute constantly supplied with information concerning Canadian agriculture, including full details forwarded by cable throughout the year in regard to her various products. Canada's pre-eminence as a leading agricultural country, and chiefly as a producer of cereals, has been frequently asserted in the Institute's publications. These publi-

cations circulate widely among our prospective purchasers in Europe.

The Institute collects and publishes, and this Branch disseminates in summarized form, to the extent of the means placed at its disposal, agricultural information other than statistics. Canadian farmers are vitally interested in learning how Germany grows more grain and live stock per acre than any other country; how Argentina and Australia succeed with their chilled meats and systems of shipping and marketing them; how Denmark beats the world in the British markets with its bacon and butter. (Abstract from Rt. Hon. Lloyd George's speech, October 1919). Our Departmental officers, are concerned with the local or Canadian national work in direct contact with the farmers, attend meetings, Conferences, Conventions, and International Congresses. The Institute steps in at the final stage and at the General Assembly and Permanent Committee meetings and in its publications discusses the results, and formulates decisions for universal adoption. It is the permanent institution established for, among other objects, giving universal and practical effect to the resolutions of congresses, hence the Institute, in addition to other means towards the attainment of this end, also collects and summarizes for each country the published results of its national or local work, including research and scientific investigations.

The Institute Branch frequently elaborates and publishes the Institute's data on the world's food and feeds, important factors in the formation of market prices, so that the aggregate supply and demand may be clearly understood and

taken advantage of by producers, their agents and the shippers. These interests have had to market abroad this year an average of about one million bushels of wheat per day.

The International Yearbook of Agricultural Statistics for 1922 was published in September last. Beginning with this issue the Yearbook, instead of being published only once every two years, is made an annual. It is also more adapted to the convenience of English speaking readers than were previous issues. It contains complete data of population, area and production of crops, international trade in and prices of agricultural products, ocean freight rates, numbers of live stock, etc., in all countries for the years 1919 to 1922 and the average for the period 1909-1913.

The twelfth volume of The International Yearbook of Agricultural Legislation, containing the more important legislation enacted in the different countries in 1922 was received. It contains the complete text of many laws on trade in agricultural products, farm machinery, and live stock, and laws that promote the activity of those engaged in agriculture, regulate co-operation and co-operative credit, etc. The titles only of a large number of laws of local interest are

given.

The necessary information concerning Canada for these two Yearbooks as well as all other information required by the Institute, including regular reports on the Canadian crops and statistics of imports and exports was furnished by this Branch throughout the year. Articles and monographs were prepared for publication in the Institute reviews. Several articles analyzing the world's

crop situation were published.

The original Institute publications were distributed to selected lists of officials and agronomists throughout Canada. Summaries of articles in the Reviews as well as special articles on the world's wheat situation and the world's live stock were published in the Agricultural Gazette. The foreign agricultural intelligence service of the Branch furnished a great deal of information to correspondents during the year. Information on the subjects discussed by the Committee were supplied to the Special Committee of the House of Commons Investigating Agricultural Conditions and, on agricultural credit, to the Honourary Advisory Council for Scientific and Industrial Research.

The Library.—The branch makes available its Library's considerable resources to research workers and others who, in large numbers, make personal visits or, through correspondence, consult the branch's Library and Periodical Room, borrow books and secure bibliographies. The Branch records show that the benefits of these resources are enjoyed by a larger number of scientific specialists and administrators outside than within the Department of Agriculture, no doubt because the objects of the Institute are so wide and allembracing, with the accumulated resources of the Library correspondingly so. Borrowers' Record:—

	orrowers Books	
Department of Agriculture	117 1,303	
Ottawa (exclusive of Department of Agriculture)	. 152 1,013	
Ontario (exclusive of Ottawa)	90 452	
Quebec	. 92 436 . 37 206	
Manitoba		
Saskatchewan		
***************************************		
British Columbia	. 39 254	
Nova Scotia	. 19 157	
New Brunswick.	. 16 104	
Prince Edward Island	. 11 95	
United States	. 1 13	
Total	. 638 4,340	

The various agricultural colleges borrowed as follows:-

	Borrowers	Books
Ontario Agricultural College	18	190
University of British Columbia	16	135
Manitoba Agricultural College	11	57
University of Alberta	23	31 118
Macdonald College		36
Institut Agricole d'Oka	13	145
Agricultural College, Truro, N.S	. 8	65
University of Saskatchewan		77

Card Catalogues.—The total number of cards in the catalogues is approximately 245,548, including:—

Shelf list	8,975
United States Department of Agriculture	35,775
Experiment Stations	39,100
Continuations of Series	2,888
Special veterinary catalogue	3,350
Library of Congress depository catalogue	92,500
General catalogue	08,675
Unfiled cards	4,285

Accessions.—Nine hundred and forty-two bound volumes were acquired by purchase, gift, exchange and binding, made up as follows: by exchange or gift and bound, 199; through entry on mimeographed book review list, 177; by exchange of Agricultural Gazette and other departmental publications, 286; by gift, 86; by purchase, 194. The average cost of the purchased books is considerably less than the cost of the volumes bound for the Library by the Printing Bureau. There is a decrease in the total number of accessioned volumes owing to the greatly decreased number of books bound. Ten thousand seven hundred and thirty-seven unbound books and pamphlets were received, of which 8,731 were continuations of series. There are now 12,768 bound volumes in the Library, but as the unbound material is greatly in excess of the bound, we estimate the Library as representing 22,500 volumes of one and a half inches each by actual measurement.

Periodicals.—Eleven thousand six hundred and sixty-five periodicals (pieces) were received representing 114 Canadian, 170 American, 58 from the British Isles and 251 from other countries, making a total of 593 titles. Of these 152 were subscribed for, and the others secured free of charge.

Booklists.—Descriptive lists of the most important accessions—excluding bulletins, proceedings, reports, etc.—were sent to a mailing list of agricultural officials and professors four times during the year.

New Work.—The Library of Congress has agreed to print catalogue cards for the more important series of bulletins of the Federal Department of Agriculture. We prepared cards for the bulletins of the new series and the bulletins of the Entomological Branch. To date, cards for thirty bulletins have been received. Others are now in their hands and will be printed shortly.

Respectfully submitted,

W. R. MOTHERWELL,

Minister of Agriculture.